Swedish University of Agricultural Sciences
*Faculty of Forest Sciences*

Department of Forest Products, Uppsala

# The French market and customers' perceptions of Nordic softwood offerings

*Den franska marknaden och kundernas uppfattning om erbjudandet av nordiska sågade trävaror*

Staffan Levin

Master Thesis
No 143 2014

ISSN 1654-1367

Swedish University of Agricultural Sciences
*Faculty of Forest Sciences*

Department of Forest Products, Uppsala

# The French market and customers' perceptions of Nordic softwood offerings

*Den franska marknaden och kundernas uppfattning om erbjudandet av nordiska sågade trävaror*

Staffan Levin

**Keywords:** France, market aspects, quality, long-term relation, whitewood, structural timber

*Master Thesis, 30 ECTS credit* *Advanced level in Business Administration*
*MSc in Forestry 09/14* *(EX0753)*

*Supervisor SLU, Department of Forest Products: Folke Bohlin*
*Examiner SLU, Department of Forest Products: Denise McCluskey*

# Abstract

The study of the French market for softwood has been done in collaboration with VIDA AB. The aim of the study was to investigate important product quality and service quality dimensions, the customers' perception of the offering and generally describe the French market and present actors.

The market for softwood around the world changes over time and new markets can mean opportunities for the sawmilling industry. The French market is the second biggest European market for softwood, has had presence of actors with sourcing of raw material from the Nordic countries for decades and there is a growing interest for building with wood.

Theory being used is about the different dimensions that make up the total quality of softwood, together with intangible dimensions making up the total offering that helps the sawmilling industry to create positive perceived value for the customers.

Methodological approach in the study was a case study research design, aimed at providing knowledge about one specific subject in one context. The general description was mostly carried out by literature studies and data from various statistics sources. For product quality and service quality dimensions and to identify keys to success, 8 semi-structured face-to-face interviews were conducted with different softwood actors in Sweden and France; suppliers, one trader and wood industry customers. The softwood actors were identified using a snowball sampling method. To cover future macro-economic preconditions for the market, a telephone interview with a market analyst was conducted.

The studied wood industry customers were glulam manufacturers, roof truss manufacturers and timber frame house manufacturers. Results show that French glulam manufacturers have had longest relations with Swedish softwood suppliers and need a high quality product which they are prepared to pay for. Roof truss manufacturers have little experience of Swedish softwood suppliers and are buying softwood of lower quality mainly on price. Timber frame house manufacturers is identified as the most suiting wood industry customer for the sawmilling industry in southern Sweden, who wish to supply strength graded and planed structural timber of Norway spruce.

Results in the study also show that the market in France is mainly whitewood and based on long-term relations with wood industry customers. Keys to success are delivering fast, according to specification and having the right type of core product. Knowing French culture will facilitate business with wood industry customers.



***Keywords:*** *France, market aspects, quality, long-term relation, whitewood, structural timber*

# Sammanfattning

Föreliggande studie om den franska marknaden för sågade barrträvaror har utförts i samarbete med VIDA AB. Målet med studien var att identifiera viktiga produkt- och servicekvalitetsaspekter, kundernas uppfattning om erbjudandet av sågade barrträvaror och att beskriva den franska marknaden generellt samt dess aktörer.

Marknader för sågade barrträvaror förändras över tid och nya marknader kan innebära möjligheter för sågverksindustrin. Den franska marknaden är den näst största europeiska marknaden för sågade barrträvaror, har haft närvaro av aktörer med sågade barrträvaror från de nordiska länderna i flertalet år och det finns ett ökande intresse för byggande i trä.

Teorin som använts handlar om de olika delar som utgör den totala kvalitén inom sågade barrträvaror, tillsammans med de immateriella dimensioner som utgör det erbjudande som underlättar positivt värdeskapande för kunden för en sågverksindustri mot sina kunder.

Använd metod har varit en case study-forskningsdesign, som syftar till att undersöka ett specifikt ämne i en viss kontext. Den generella beskrivningen av marknaden utfördes främst genom litteraturstudier och statistiska data. För att identifiera viktiga produkt- och servicekvalitetsdimensioner och viktiga fokusområden för att lyckas, genomfördes 8 semi-strukturerade intervjuer med olika aktörer inom sågade barrträvaror i Sverige och Frankrike, nämligen leverantörer, en trader av sågade trävaror samt träindustrikunder. Dessa aktörer inom sågade barrträvaror identifierades med hjälp av en snöbollsurvalsmetod. För att beakta framtida makroekonomiska förutsättningar för marknaden har en telefonintervju med en marknadsanalytiker utförts.

De undersökta träindustrikunderna är limträtillverkare, takstolstillverkare samt trähustillverkare. Resultaten visar att franska limträtillverkare har haft längst relationer med svenska leverantörer av barrträvaror och kräver en hög kvalitet på råvaran, vilken de betalar för. Takstolstillverkare har liten erfarenhet av att köpa svenska barrträvaror och köper barrträvaror av lägre kvalitet främst på pris. Trähustillverkare är identifierade som mest lämplig träindustrikund för sågverksindustrin i södra Sverige, som vill sälja hållfasthetssorterat och färdighyvlat konstruktionsvirke av gran.

Resultaten i studien visar vidare att marknaden främst utgörs av sågade trävaror av gran och att relationer mellan leverantörer och träindustrikunder är långsiktiga. Viktiga fokusområden för att lyckas är att leverera snabbt, i överensstämmande med specifikation och att ha rätt typ av kärnprodukt. Att ha kännedom om fransk företagskultur underlättar affärer med franska träindustrikunder.



***Nyckelord:*** *Frankrike, marknadsundersökning, kvalitet, långsiktiga relationer, sågade trävaror av gran, konstruktionsvirke*

# Preface

- *Hôckin hör du te då?* – Random person from Malung

I wish to give my sincerest thanks to Måns and Camilla at VIDA AB, who managed to make something practical out of my softwood market verbiage. Big thanks to the people at VIDA AB who have shared their time and knowledge, so I could get something practical out of my little study.

The study had not been half as good without my trip to France. Hence I show great gratitude to Såg i Syd AB and its anniversary foundation, providing funds to make the trip possible.

I also show great gratitude to all the people who helped me in order to meet with suppliers and wood industry customers in France.

Uppsala 2014-07-25

Staffan Levin

# Contents

# 1 Introduction

## 1.1 The Swedish forest industry and the sawmilling industry

International and Swedish forest firms have been struggling with low profitability for decades (Rennel 2010; Stendahl 2009). In large forest industries, Return on Capital Employed (ROCE) has been between 2.3 – 4.4 % the last five years (PwC 2013). The forest industry is becoming more global, meaning new market opportunities are arising. The global export value of forest products has increased by 85 % from 1996 to 2007, indicating an increase from USD 132 billion to USD 245 billion. Likewise, the global net trade of sawnwood increased during the last five years, totaling at 119 million $m^3$ 2012; a 29 % share of the total global produced volume of 413 million $m^3$ (FAO 2014a). However, competition is intensifying. With this new competition, business cycles in the forest industry, together with altering currency exchange rates, can have a negative impact on profitability (Stendahl 2009).

Swedish sawmill firms have aimed to address globalization and profitability concerns via innovation. For example further integration of house manufacturing and joinery that was previously carried out by customers and improved offerings (Stendahl et al. 2013). Accordingly, some sawmilling industries have invested in their own integrated production, especially around 2005 (Hugosson & McCluskey 2008). In order to reduce production costs, there has been a change from a handcraft approach to a more automated manufacturing process (Stendahl et al. 2013). A second area of innovation is building relationships with customers (Hugosson & McCluskey 2008; Stendahl et al. 2013, including establishing local market presence (Hugosson & McCluskey 2008).

The majority of the Swedish sawmilling industry's products are exported (Nord 2005; Anon 2013a). Since 1980 exports of Swedish softwood has grown from 6 million $m^3$ annually to 11.8 million $m^3$ in 2012. Around 75 % of the produced sawnwood is exported and the markets outside Europe are increasing their share (Anon 2013a). Lately Swedish softwood producers have invested in international sales offices (VIDA 2011; SCA 2013) and there are international programs to increase the use of wood (see, for example Svenskt Trä 2012).

The focus on creating values and to gain higher margins for the finished goods has driven the sawmilling industries to seek market opportunities in new markets and to expand their borders internationally. This concept is referred to as internalization in the literature (c.f. Calof & Beamish 1995; Johanson & Wiedersheim 1975; Welch & Luostarinen 1988; Zhang et al. 2014)

## 1.2 Sawmills in Sweden

There were 135 sawmills in Sweden producing more than 10 000 $m^3$ in the year of 2012. This figure has dropped from 283 sawmills in 1980, although the sawmilling industry was producing almost three times more in mean, 115 000 $m^3$, by the year 2012. The number of sawmills are decreasing but the produced volume has increased from 11.2 million $m^3$ in 1980 to 15.8 million $m^3$ in 2012. The total export value of Swedish sawnwood was 22 billion SEK in 2012. (Anon 2013a) Some years there has been high-marks of sawnwood production during favorable preconditions i.e. booms, favourable currency exchange rates and higher finished goods prices. (Anon 2013a).

### *1.2.1 Profitability in the sawmilling industry*

Factors explaining the low profitability in the sawmilling industry are intensive competition, high substitution of wood for other materials and new powerful customers which use market

power against the fragmented sawmilling industry (Björheden & Helstad 2005; Lähtinen 2007; Sauquet et al. 2011). The private forest owners, who are key suppliers to sawmills, are treated as a high valued customer rather than a supplier of raw material. If the sawmilling industry were more consolidated it would have a better possibility to get control over the raw material flows (Björheden & Helstad 2005). Björheden and Helstad (2005) conclude that the Swedish sawmilling industry is severely fragmented meaning that a large number of producers are responsible for the total Swedish sawnwood production.

Sawnwood is a globally traded commodity (c.f. Björheden & Helstad 2006). Since it is traded world-wide, the cost-competitiveness of the sawmilling industry is affected by currency exchange rates. In previous years the low, or even lack of profitability for sawmills have been explained by the unfavorable exchange rate (Andersson 2011; Freij 2013; Lindberg 2012). The most important trading currencies – EUR, GDP and USD has weakened between 2009 and 2013 against the Swedish krona, meaning it is more expensive for foreign customers to buy Swedish sawnwood.

Even though currency exchange rates are of great importance for profitability in the sawmilling industry, the competitive advantage of the sawnwood industry is to the largest extent decided by resources inside the firm – personnel, managerial, raw material and financial factors (Lähtinen et al. 2008). The added intangible product offerings like good quality in supplier service, logistics, and other soft values should also be taken into account. The Swedish sawmilling industry needs bundle products with services (Hugosson & McCluskey 2009).

To tackle the low profitability, the sawmilling industries have been taking different measures in order to maintain acceptable margins to sustain long-term. The most common strategy has been reducing costs in production, since sawnwood is considered to be a commodity and a single firm cannot change the price of the finished product. This cost reduction mainly done by continuously improving and advancing the technology used in production (Björheden & Helstad, 2005).

Despite all this industry rivalry and intense competition, some sawmilling industries certainly are profitable and provide good examples of entrepreneurial business. Given the hard competition, only the best will survive, with only the companies generating value by competitive advantage prevailing in the long run (Magretta 2008). The high raw material cost for the Swedish sawmilling industry is leading to a cost competitiveness-disadvantage comparing to other nations. Except for the disadvantage of high raw material cost, the Swedish sawmilling industry has an advantage of being able to supply high quality softwood, as well as getting paid for the by-products such as chips and sawdust (Pöyry 2013).

### 1.3 Different markets and the French market for softwood

The sawmilling industry is constantly searching for new markets in order to sell its volumes and to sell the sawnwood at profitable levels. Today there is a strong focus on the emerging markets called ‘new markets’, meaning mainly Southeast Asia and China (c.f. SCA 2010, Skogsindustrierna 2013). Every firm has different strategies regarding what markets to sell to and a market considered appropriate for one sawmilling industry may not suit the other.

The French market for sawnwood has been quite stable regarding trade flows and suppliers. The French market is the 9$^{th}$ biggest market for Swedish softwood suppliers with an annual exported volume of around 450.000 cubic meters (Anon 2013a).

Consumption of softwood in France shows a relatively stable pattern, it is in levels with the total UK market and if Russia is excluded (which shows ambiguous figures throughout the years), it has been the second biggest market for softwood in Europe, the last seven years, see Table 1.

*Table 1. Consumption of softwood 2007-2013, with projections for 2014, in twelve selected countries and regions (1000 $m^3$). Source: Anon 2013b and FAO 2014b (figures for Japan)*

| *Softwood consumption (production + import - export), in some selected countries (1000 $m^3$)* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014* |
| Denmark | 2 850 | 2 186 | 1 549 | 1 607 | 1 644 | 1 540 | 1 447 | 1 460 |
| **France** | **10 837** | **10 774** | **9 167** | **9 500** | **9 745** | **8 793** | **8 500** | **8 500** |
| Germany | 18 600 | 17 567 | 16 778 | 18 425 | 18 929 | 17 672 | 17 700 | 18 600 |
| Italy | 7 188 | 6 117 | 5 162 | 5 768 | 5 729 | 4 860 | 4 340 | 4 610 |
| Netherlands | 0 | 0 | 2 132 | 2 290 | 2 289 | 1 998 | 1 855 | 1 840 |
| Norway | 3 123 | 2 685 | 2 245 | 2 552 | 2 700 | 2 760 | 2 710 | 2 670 |
| Russia | 3 656 | 4 713 | 1 400 | 1 600 | 10 300 | 10 600 | 9 700 | 10 100 |
| Spain | 0 | 0 | 2 776 | 2 455 | 2 496 | 2 299 | 2 161 | 2 209 |
| Sweden | 7 570 | 5 449 | 4 700 | 5 100 | 4 700 | 4 300 | 4 350 | 4 500 |
| UK | 10 717 | 8 054 | 7 490 | 8 121 | 7 623 | 7 997 | 7 893 | 8 103 |
| Japan | 18 333 | 16 857 | 14 444 | 15 379 | 15 814 | 15 534 | 0 | 0 |
| USA | 0 | 70 256 | 53 067 | 61 496 | 57 958 | 62 357 | 64 799 | 67 073 |

*Note: 2013 data are estimations, 2014 data are projections. 0 means lack of data.*

The history of exported volumes of softwood from Sweden to France appears to be in form of long-term relationships where a few suppliers dominate the volumes. Several smaller sawmilling industries seem to have used the market for spot by intermediaries. The main Nordic actors on the French market have been Setra, SCA Timber and Stora Enso Timber, Metsä Wood and UPM Timber. Other, mainly smaller sawmilling industries have used the market for spot often via intermediaries. VIDA Wood is selling a few thousand $m^3$ softwood each year and focus have been on other markets like US and U.K., hence knowledge of the French market is relatively low.

The distance to France is significantly smaller than to the 'new markets' in SE Asia and there are policies promoting wood and some indicators of rising economic growth increasing interest for the market. Being the second largest market in Europe (excluding Russia) for softwood consumption in Europe between 2007-2013 (Anon 2013b) provides further rationale for knowledge of the market.

## 1.4 Improving profitability for the sawmilling industry

The previous research in this area has mainly focused on production optimization and efficiency. A few examples are counting on a buffer unit in a sawmill which increase production by reducing standstills (Magnusson 2013) and how to buy the right timber; generating highest profitability with further processing (Petterson 2013). Surely this is an important part, especially in a business where roughly 60 % of costs are related to the timber (Johansson & Rosling, 2002; Lindholm 2006). Also, there are areas in Sweden where the sawmilling industry have had problems to get the timber needed (Björheden & Helstad 2006). Apart from the focus on keeping costs at a reasonable level, the other way to increase margins i.e. higher finished goods prices, can be achieved by adding value e.g. planing, strength

grading, finger jointing or developing new products which few actors have. In order for the wood industry to maintain its competitive global position it must continue to innovate (Stendahl 2009). The short term needs of dealing with everyday tasks seem to be a great challenge for managers to promote long-term innovation processes though (Stendahl 2009).

Another way to increase the margins, find marketing for the products and to increase profitability is to identify suitable new markets for the sawmilling industry. Since the market opportunities are varying both geographically and from year to year, there is a constant need for the sawmilling firm to stay updated with new markets. Studies about market analysis for different sawnwood markets have been conducted by both scholars and by companies for the sawmilling industry (c.f. Exportrådet 2006). Edgren (2011) studied what Egyptian importers value on a wanted supplier of softwood. Brännström (2011) analyzed how competitive SCA Timber was on the Norwegian market for DIY. Exportrådet's study focused on the DIY chains (Do It Yourself) which are consolidated and use central purchase organizations in France. They used different types of interview techniques, in order to answer questions on what is important for a supplier to stay competitive on the respective markets.

## 1.5 Entering new markets and choosing your customer

It has previously been highlighted that firms in the sawmilling industry can generate more business values and enhancing their sources of income by entering new markets (Törrö 2011).

The literature of market entry is often focused on the supplying firms, meaning that it has the supplying firms' needs as the unit of analysis. In order to generate new business values as well as increasing competitiveness for the suppliers, the literature is proposing the suppliers to establish business relationships with customer firms (Hunt et al 2006). Building up relations can mean varying degrees of resources gained; hence firms should choose relations wisely (Morgan & Hunt 1999).

Selling to customers for a sawmilling industry can mean both selling through middlemen and by selling directly to customers (Hugosson & McCluskey 2008). Around 70 % of a typical Swedish sawmill firms' business volumes are made up of direct business interactions (Hugosson & McCluskey 2008).

Törrö (2011) studied the Spanish market in terms of seeking opportunities for sawmills in Sweden to get closer to potential customers in the wood industry in Spain. Unpublished findings show that potential customers are relatively well concentrated, with five of Spain's seventeen regions utilizing 70 % of total Spanish wood imports (Törrö 2011). The conclusion in Törrö's (2011) study of the Spanish market is that the customers demand homogenous products with tailored logistics services. To bring added value for the customer, logistics, services and relationships should be addressed. If these categories are neglected the customers perception of value will be low, no matter what the quality of the core product.

In a study on the Spanish market of wood products it is evident that culture and language can work as barriers for foreign competitors, and that loyalty and personal contacts are essential in the market (Metsävainio 1992). Unpublished results from Törrö (2011) indicate the same.

## 1.6 VIDA Group

The business environment for a sawmilling industry in Sweden is challenging. The VIDA group is generally recognized to be an entrepreneurial firm, given the fact that the turnover has increased significantly the last decade, while profitability has remained the same (see annual

reports). The business started in 1954 with Ångsågen in Vislanda. Vislanda was giving the shipping mark the abbreviation VIDA, a sign that is now given to all the softwood that is coming from one of the seven sawmills today (VIDA 2014d). The group has also grown in house manufacturing, bioenergy and packaging. Today, the VIDA group is Sweden's largest privately owned sawmill organization, looking at produced volume of softwood (Anon 2013a). The company has grown from one sawmill in Småland to now seven sawmills exporting more than 1.2 million cubic meters all over the world.

Signs of being entrepreneurial can be found in the fact that the company has grown significantly with remained profitability, being fast in trying new markets like USA, taking decisions on further processing the major part of its products (planing), buying own logistics operations (train). The way of doing business is with short ways of decision and a strong focus on each individual's capability. (Johansson, pers. comm. 2014)

VIDA Group is located in the southern part of Sweden, mainly in Småland and Västra Götaland County and is producing mainly structural timber. VIDA is also producing houses, packing, pellets and conducts trade with biofuels. The company has around 900 employees, produces almost 1.3 million $m^3$ of softwood and other products at 17 facilities and has grown significantly. The VIDA Group is consisting of a purchasing organization, VIDA Skog, a sales company called VIDA Wood AB, the seven different sawmills and ten more production facilities. (VIDA 2014a)

The typical product from VIDA is structural timber of Norway spruce, dried and planed and often strength-graded in some way to ensure the softwoods strength in constructions. 80 % of the produced volume is Norway spruce, sourced mainly from southern Sweden. Each sawmill within the group is specialized and are focused on further processing (VIDA 2014b; VIDA 2014c).

In order to meet customers varying demand in delivery time, VIDA has several buffer inventories. This is done in order for VIDA to be able to supply both large quantities that is driven by prognosis as well as customers' fast needs for softwood, i.e. just-in-time deliveries by trucks. (Johansson, pers. comm. 2014)

VIDA Wood AB is selling VIDA group's softwood to different countries around the world. Around 80-85 % of the produced volume goes on export. To supply its global customers, VIDA Wood has five sales offices world-wide; Denmark, Netherlands, USA, Japan and the UK including Ireland. (VIDA 2012)

## 1.7 Purpose of the study and research questions

The overall aim for the study is to assess important market aspects, product quality and service quality dimensions and the customers' perception of the offering in order to be an appreciated supplier of softwood in the French market.

In order to be able to fulfill this aim, the study has three research questions:

1. To assess the French market for softwood, in terms of product flows, trends and market actors
2. To analyze important product and service quality dimensions, according to wood industry customers and key market actors

3. To develop advice on how to fulfill French wood industry customers' demands, regarding e.g. logistics, service levels and product quality levels

### *1.7.1 De-limitations of this study*

The study will cover potential industrial customers i.e. business to business in France. The studied wood industries are glulam manufacturers, roof truss manufacturers and timber frame house manufacturers. The analyzed products in the study will be planed and strength graded structural timber of Norway spruce from the southern part of Sweden.

## 1.8 Need for the study

Published literature regarding market entry for the Swedish sawmilling industry is scarce. Generally speaking the literature about relations for the sawmilling industry is talking about the need for a customer-adapted view, i.e. do what your customers ask for. Customers in different countries and regions will be subject to various business traditions, cultural barriers and appreciated softwood dimensions; hence studies on different markets may apparently seem the same, although the results will most certainly differ when comparing market aspects. Since the study is not only regarding customers, but also suppliers and an intermediary, relations with French wood industry customers will be covered from different views and therefore providing a comprehensive understanding of the complexities regarding relations.

Last but not least, it is a big market for softwood with growing interest of building with wood, providing means for a sawmilling industry to exploit the opportunities of a growing export to the country.

# 2 Theory

## 2.1 Key relationship marketing history and important concepts

Relationship marketing has developed since the 1980s and onwards, as a discipline in the marketing field. One can see three different views of marketing throughout the time:

- Before the industrial revolution, a relation focused marketing was most common which meant an close interaction between seller and buyer

- During the industrial revolution, marketing was dominated by transactions and goods was mass produced and sold by intermediaries

- After the industrial revolution, focus again was turned into relation marketing. The shift towards relation marketing was due to the focus of quality, the emerging service sector and a competition of loyal customers

Relationship marketing is putting emphasis on the importance of satisfied and returning customers, a difference from other marketing since relationship marketing means a long-term value of keeping customers. This is different from the traditional view of marketing, where the goal is to always attract new customers. (Eiriz & Wilson 2004)

The definition of Relationship marketing is given by Eiriz and Wilson (2004)

*…the set of marketing activities oriented to establishing, developing, maintaining and terminating relational exchanges.*

Cannon and Perrault (1999) have synthesized relationship theory and empirical research over several disciplines and outlines a set of says to connect sellers and buyers with varying degree of commitment and operational activity of each part:

1. **Information exchange** means open sharing of information that can be used for both seller and buyers advantage. Examples can be to share forecasts of supply and demand and to share information of costs.

2. **Operational linkages** are referring to the activities and processes between seller and buyer that ensure that there is a flow of goods, services and information between the parts. If the operational linkages are low, each part operates independently while if operational linkages are high, the two parts may share e.g. inventory.

3. **Legal bonds** are how formal the two parts are conducting their business. On the low extreme a gentleman's agreement i.e. a handshake may suffice while on the other extreme very detailed written documents are present.

4. **Cooperative norms** are handling how the buyer and seller should work in order to reach their individual and mutual goals.

5. **Adaptions** are the changes or investments sellers and buyers are conducting to processes, products or procedures which are specific to the seller or buyers capabilities or needs.

The degree of trust, formal contracts and adoption between seller and buyer in relations between a sawmilling industry and wood industry customer is varying (Hugosson & McCluskey 2009). Depending on how the volumes of softwood are sold – as spot volumes on widespread markets through intermediaries or by direct business interactions sawmill-wood industry customer the relationship types will vary.

### *2.1.1 'Locking in' your customer*

In order for the supplying firm to enhance its business value they can try to 'lock in' their customer by offering something that is hardly achieved from someone else, or the offering provided is crucial to the customers' business (Parvatiyar & Sheth 1999).

A sawmilling industry which has worked for a long time on a market will know what the customers demand and also what is not appreciated. This can mean that the willingness for a customer to untie its bonds is low, since there are potential transaction costs working up a new relation.

An example of locking in customers in the wood working industry can be if a wood industry customer has a very specific set of required softwood that is suiting for their production, when few sellers can supply this specific softwood. By offering this softwood and handling service well, the supplying sawmilling industry may receive a strong and long-term relation that is mutually beneficial.

## 2.2 The offering

In later literature there has been an increased focus on what a product actually can be made up of regarding different aspects of quality. By value-adding the sawnwood it can be more than just a piece of wood by e.g. further processing it and delivering it just-in-time, matching the customers' needs and rationalizing their use. As the sawnwood is considered a commodity and is enduring intense competition from both competing sawmilling industries and countries, the different sawmills need to enhance the value that is offered in order to stay competitive.

There is a growing evidence of the firm's ability to get a competitive advantage by promoting their products in a value-added way. This means that the basic commodity products like sawnwood can be distributed in different ways, it can be flexible in length and appearance, it can have sustainability marks like PEFC or FSC and it can be delivered in different time-spans (Grönroos 2006; Hugosson & McCluskey 2009).

The offering from a supplier is described as *"a promise to a customer that addresses a particular problem of that customer"*, meaning that the offering from the supplier is made up of both the product and service aspects. The offering is consisting of five different elements. (Ford et al. 2006)

1. The product. This is made up of the tangible and visible part of the physical product. This is the most concrete part of the offering and hence it is often described as the most important part of the offering. This can in practice be wrong since the mere product can be less important comparing to other parts of the offering. Consider for example structural timber. Maybe the sole plank is not that valuable for the building company, they can just buy it from someone else. But the fact that in can be delivered in time before everyone arrives at the building site and that it is intact from damage can be argued to be equally or even more important.

2. Service. The core product is not worth much unless it comes with some sort of service like fast delivery or good customer handling. VIDA Wood AB has different service offerings regarding e.g. size of orders, time of delivery and further processing to varying degree.

3. Advice. This element includes the activities that the supplier is performing in order to enhance the customers' understanding of the right use of the product. Depending on the uncertainty for the product from the customer, the magnitude of advice will differ. For a customer with high uncertainty of e.g. how to use the sawnwood in the best way, good advice can lessen the importance of low price.

4. Delivery. This part deals with the basic questions on how, when, where to and in what form the offering should be transported to the customer. Regarding softwood this part can be very important in solving the customer's problem. The just-in-time (JIT) delivery concept is subsumed here.

5. Costs and price. Except the price of the product, the customers' total cost in order to get and use the offering will be higher. Transaction costs like contacting and working the supplier and measurements to ensure that the product reaches the quality targets of the customer will add to the total cost. Hence the total costs of the offering should be considered when comparison is conducted between suppliers.

## 2.3 Wood quality as an aspect of the offering's product element

Traditionally wood quality has been seen as something that can be measured. Examples of characteristics of high wood quality can be knots per centimeter, what visual appearance the sawnwood has, absence of vane etcetera. This may be a heritage of the history of Swedish wood quality, where focus has been on straight pines and measurements to maintain the wood quality in order to produce durable houses. The understanding of wood quality has not changed much. In the so-called Blue book (former "Green book") the widely used sorts of softwood are defined (FSS et al. 1994). This implies that a sawmilling industry can rate its "quality" against competitors.

The understanding of quality of wood has been recognized early. In 1800-th century Sweden, Christopher Polhem – a famous inventor, stated the following indicators for good quality pines for construction (SFV 2008):

- Site location
- Age
- Heartwood percentage
- Butt log
- Wood density
- Late wood percentage
- Content of extractives
- Spirally grown

In the Swedish guidelines from 1937 for construction one can read that the wood for construction should be fine-textured, fresh, fully grown, logged in winter and straight. This general prescription was then defined in explicit demands for different classes of wood. Classes 1 – 5 were present with different sets of measurable indicators for the respective class, e.g. maximum 15 twigs per square meter. (SFV 2008)

In order for the sawmilling industry to improve its competitive situation the general belief is that it requires superior product quality, comparing to its competitors (Toivonen et al. 2005). Previous research also outlines that quality can be considered in different aspects and dimensions (c.f. Garvin 1984).

Since quality is not only present in the product, the company can raise overall quality by enhancing other intangible dimensions like related services and information. One response from the forest industry to tackle enhanced competition has been improved physical product quality. While improving this physical product quality, it is important for the company to measure the quality from the customers' perspective, since it is the customers' perception of a product that is important for the company's success (Toivonen et al. 2005).

## 2.4 Service aspects of offerings

Service is a concept that most of us have some implicit understanding of – maybe that we get the ordered food fast or that the waiter provides a smile while serving. Since the concept is widely used and is central in the realm of industrial marketing (c.f. Grönroos 2007; 2008; 2010; Vargo & Lusch 2004) it is important to provide a contextual understanding.

Vargo and Lusch (2004) define the service concept as follows: *"We define services as the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself."* This definition is basically the same as presented in Grönroos (2008).

Gummesson (1996) emphasizes the importance of the firms' understanding of the fact that the goods they provide are not just goods or services; the customers buy offerings which in turn renders services which create value. This means that the traditional conception that product and service is not linked to each other is outdated and that they are intertwined and brings value to each other.

### *2.4.1 Service quality*

In addition to quality related to the core product, service quality has emerged as a concept in literature relating to how well a firm is performing regarding its service. Today a major part of people's jobs are related to the service sector. Service quality as a concept can be considered logic given the service sector's large share of economy. For example, in Sweden the service sectors' share of GDP was almost 72 % in 2010 (Landguiden 2014).

Since service quality can seem abstract and elusive, Cronin and Taylor (1992) has proposed a sophisticated way of measuring service quality. Previously Parasuraman et al. (1985) presented the gap theory, meaning that service quality is the difference between consumers' expectations about the performance of the general service provider, and the actual service providers' present performance. Cronin and Taylor (1992) states that the gap theory lacks empirical evidence and proposes a performance-based measure.

Parasuraman et al. (1988) presents a conceptual framework for the perceived service quality, which is made up of five components, which in turn is investigated by a set of different questions, see Figure 9.

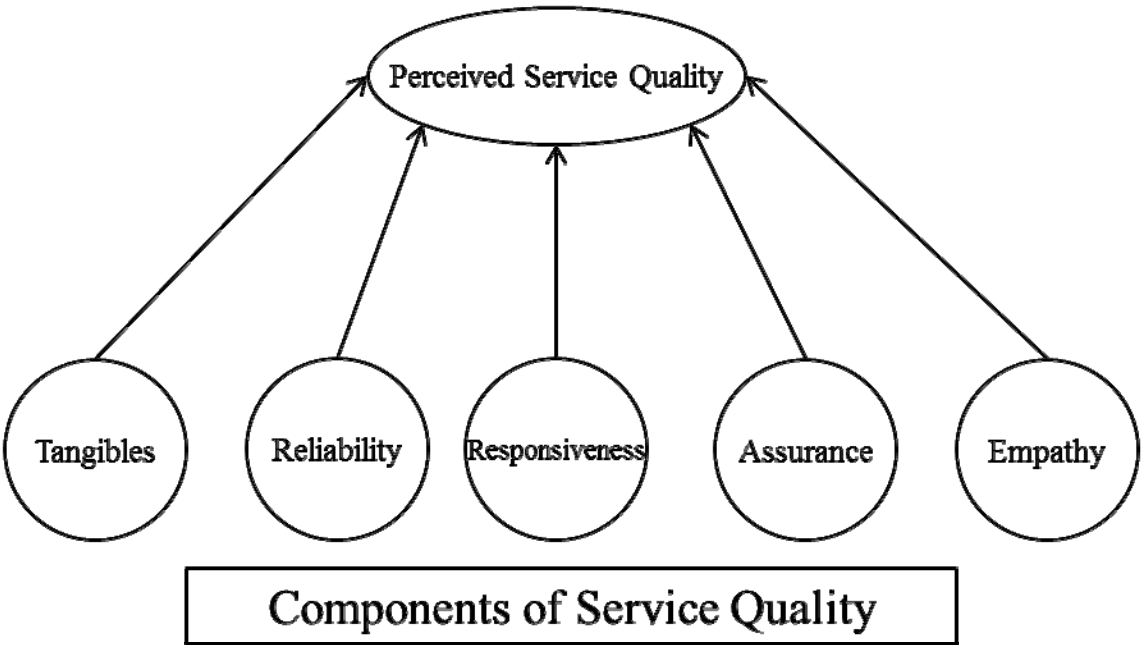


*Figure 9. Components of service quality. Adapted from Parasuraman et al. (1988).*

The main conclusion in the work of Cronin and Taylor (1992) is that consumer satisfaction rather than perceived service quality, is working as a predictor of purchase intentions. For managers this would mean that they should focus on building strategies in order to get satisfied customers, to make them buy their products or services (Cronin & Taylor 1992).

Storbacka et al. (1994) states that service quality leads to satisfaction, that ultimately leads to loyalty in purchasing. The impact of service quality on satisfaction, and how well satisfaction leads to customer loyalty, and ultimately profitability has been discussed by e.g. Rust and Zahorik (1993).

Dimensions of product and service quality

The different dimensions of product and service quality making up the total product quality of the product can be outlined by combining Garvin (1984) on product quality and Parasuraman et al. (1988) on service quality:

- Product quality (Garvin 1984)

  I. Performance – Primary characteristics of a product, such as attributes
  II. Features – Characteristics, added on top of primary ones
  III. Product reliability – To what likeliness the product will fail within a specified time period
  IV. Conformance – Compliance with the customers' requirements of the product or service
  V. Durability – Probability that the product will break
  VI. Serviceability – Ease of repairing and maintaining the product. This dimension also includes the service persons behavior
  VII. Aesthetics – Appealing visual appearance
  VIII. Perceived quality – Other aspects of quality that are not included in the others

- Service quality (Parasuraman & Zeithaml 1988)

    I. Service reliability – consistency with performance and dependability. Meaning that the service is right the first time and that the firm keeps what is promised
    II. Responsiveness – How willing a firm is to provide service and giving prompt service
    III. Assurance – Ability of inspiring trust and confidence by employees' knowledge and courtesy
    IV. Empathy – Individual attention to customers
    V. Tangibles – The physical evidence of a service, e.g. physical facilities and the looks of equipment used to provide the service. (e.g. VIDA train)

The sawmilling industry in Sweden has lately been considered to adhere to the customers' needs to a larger extent. Taking into account customers' needs is identified as a way to reach strategic fit (c.f. Chopra & Meindl 2013) and there are several initiatives taken by the sawmilling industries in Sweden in order to get more responsive, get to know its customers better and to serve them faster. Evidence of this is the sales offices that have been established around the world. This means that the sawmilling industry will be able to give advice on best practices, be more responsive but also to be able to supply the right type of product. The best way for the sawmilling industry is to supply a product that meets the customers' demands of product quality, without providing unnecessarily high product quality, i.e. get paid for premium quality.

Perceived quality is a product quality dimension outlined by Garvin (1984) meaning aspect of quality that cannot be found in his seven other dimensions. Examples can be a brand that is perceived to indicate high quality, and as with forest and sawn softwood from the northern parts of Sweden. Sawmilling industries in the northern part of Sweden is often stating that their raw material sourcing base is leading to high quality end-products (c.f. Fiskarheden 2014; Gällö Timber 2014).

## 2.5 Customer perceptions of value

The basis for relationship marketing is all about creating value for the customer (Grönroos 2000). By dialogue and interaction between the supplying firm and the customer, value can be created for the customer in a process way.

To get this value, the buying firm makes some sacrifice like for example transaction costs for buying a product or the price of the product. The customers' perception of value can be both positive and negative and is changing over time.

Grönroos (2000) defines the concept as *Customer perceived value (CPV) = Core value ± added value*.

The core value comprises the benefits from the product, compared to the price of the product while the added value can be services like fast deliveries. The added value can mean that the CPV can be negative, e.g. if the delivery of the product is not in time or if there is a lack of information (Hugosson & McCluskey 2009).

The concept of CPV is stressing the need for a supplying firm to create value by supplying the right product and at the same time deliver great service, which can make up a great offering with positive added value.

## 2.6 Theoretical framework

It can be concluded that the offering from the company should be made up of both tangible and intangible components and that the company should provide product, service and advice. Quality should be considered in a multidimensional way. Even though 'quality' is a multidimensional concept, tangible quality dimensions are still very important. To find the best mix of tangible and intangible components making up the offering, a firm need to evaluate what is most important according to the customers' perception of value. By using different types of relationship types, a sawmilling industry can establish interactions with varying commitment that is either focused on delivering spot volumes on one extreme or building up close long-term relationships with wood industry customers based on trust.

# 3 Method

One can perform a study in different ways, meaning that the approach can be new and explorative in different magnitude. Either the field of study is well defined and already looked upon by many, meaning that the degree of exploration would be low. If the field of study contains elements where no or little research has been conducted, it can be argued that explorative studies should be undertaken. (Aaker et al. 2001) Studying a market for softwood and important quality dimensions are not new to the world and this study can rather be considered narrative. Narrative analysis means that emphasize is put on histories by people describing happenings when analyzing qualitative data such as semi structured interviews (Bryman 2008).

In this study, both qualitative and quantitative research will been conducted. Qualitative research means that the focus is on the spoken word rather than figures for the analyses of data (Bryman 2008). Apart from theory being a result of practice, the qualitative approach is considered to be interpretive and constructionist, meaning that social occurrences and their meaning will happen continuously (Bryman 2008). Customers' values about product and service quality are anticipated to be made up of both expressed and unexpressed considerations. Qualitative interviews cover both expressed and unexpressed needs (Bryman 2008), and may capture the complexity of the questions.

## 3.1 Case study

The study is conducted with a case study research design.

A case study provides a detailed and thorough understanding of one specific case (Bryman 2008). The case study research design is widely used in sociology and the word 'case' is referring to the fact that the studies is usually tending to be on a certain location, society or organization. Although there is a conception that case studies are related to qualitative research, the case studies often include use of both qualitative as well as quantitative methods (Bryman 2008).

Bryman (2008) states that it is probable that a survey, based on exclusively quantitative methods should be regarded as a cross-sectional study, rather than a case study. The same logic can be brought upon case studies if the data is gathered exclusively on a qualitative basis (Bryman 2008).

Important for the correct use of the research design 'case study' is the unit of analysis. The design implicitly means that you study a 'case', not a phenomenon. (Bryman 2008) The focus in the study is to investigate opportunities for a sawmilling industry in the southern part of Sweden to reach increased exported volumes of softwood to France. Although the potential wood industry customers may be present in other countries, they will probably operate in a different business environment with different aspects of doing business.

There are two main ways of analyzing data, deductive or inductive. If you draw conclusions from theoretical "logic" with less respect taken to actual experience it is regarded to be deductive. If you gather data, analyze it and draw conclusions, it is regarded to be inductive. A case study research design can be both inductive and deductive. If the drawn conclusions come mainly from qualitative data, the case study can be considered to have an inductive approach (Bryman 2008). This study is considered to be mainly inductive.

Basis for the choice of a case study is presented in Yin (2003). The situation where a case study is relevant is presented in Table 2. The study focuses on providing answers on what a sawmilling industry in southern Sweden should focus on in order to increase its sales of

softwood to France. The study is focused on what is present now, the actual presence of competitors and potential customers and so on.

Another argument for a case study research design is the need for both primary data and secondary data. To cover present market implications and keys to success, softwood actors are interviewed and to cover the general market overview and also projections for the future, secondary data like trade flows are analyzed together with findings from the interviews.

*Table 2. Situations when a case study can be relevant. Adapted after Yin (2003)*

| Research strategy | Form of Research Question | Requires Control of Behavioral Events? | Focuses on Contemporary Events? |
|---|---|---|---|
| **Case study** | How, why? | No. | Yes. |
| ***My scope*** | *How can a sawmilling industry act in order to increase sales of softwood to France* | | *The present market for softwood in France* |

### *3.1.1 Reasons to choose a case study*

The basis of choice of a case study is the possibility to use both quantitative and qualitative methods, as well as both primary and secondary data. I wanted to describe both the macro economic factors to give a general understanding of the market, as well as providing a more detailed and thorough description and understanding of the wood industry customers by interviewing.

### *3.1.2 Case study critique*

Robert K. Yin is one of the most well known in the methodology of case study research design. In his book Case Study Research he highlights that the case study research design can be considered to be a weak social science method, basically because of lacking precision, objectivity and rigor. It is important to know that the method can be challenged and that the results can be underappreciated. (Yin 2003)

One can conclude that the method is widely used in different various types of research. Yin (2003) states that the greatest concern has been over lack of rigor, that the researcher is using equivocal evidence or biased views that have affected the findings. Despite the criticism, case studies are often used as a research design in both traditional disciplines like political science as well as practice-oriented fields like management science (Yin 2003). Even though the general conception about case studies is that the results are not generalizable, thorough case studies can provide basis for both explanations and generalization (Yin 2003).

A problem with case studies is that literally every survey can be considered to be a case study. The important thing is that a case study means that the actual single case provides rationale for the scientist to conduct a thorough elucidation of the case (Bryman 2008). Further critic of case studies is that they are thought to capture only the complexities of the individual situation. Magretta (2012) is talking about not seeing the forest for all the trees. But surely, my aim in this study is not to see the forest, it is rather to see the softwood behind the trees.

To summarize the interpreted criticism of case studies:

- Lack of rigor
- Results not generally applicable
- Can be or have been used in every type of research

### *3.1.3 Criteria of quality of case studies as a research design*

Four criteria are discussed when analyzing quality of social science methods in common, as well as for a case study. The criteria are construct validity, internal validity, external validity and reliability (Yin 2003). The four criteria or tests are described below:

1. Construct validity: how well the studied criteria are corresponding to the sought application. How the studied criteria are related to the objective of the study.
2. Internal validity: how credible the results are, i.e. if there is a relationship between x and y
3. External validity: if the results can be used in other contexts
4. Reliability: to what degree the same results are obtained at another time. (Bryman 2008; Yin 2003)

The focus of the study is not to provide external validity, given the fact that the study is done under a set of prerequisites. Since the study is not an explanatory case study, the question of internal validity will not be covered. The criteria considered applicable and important to enhance quality of this case study is presented in Table 3.

*Table 3. Tests to improve a case study. Adapted after Yin (2003)*

| Tests | Do this to enhance the study | Phase of study |
|---|---|---|
| **Construct validity** | Multiple sources | Data collection |
| | Establish a chain of evidence | Data collection |
| | Let important informants review the draft | Assembly of study |
| **External validity** | Use theory in single-case studies | Research design |
| **Reliability** | Make a protocol, i.e. how you did it | Data collection |

## 3.2 Case study research approach

The study can be considered to have three aspects: 1) the general description of the market with quantitative and secondary data; 2) the pre-study in form of pilot studies in Sweden, as well as 3) the primary data collection in France and Sweden.

The pilot studies was conducted in order to gain knowledge of the wood industry customer segments, learn about the host company and supplied product (planed and stress graded structural timber) as well as getting experience of interviewing. The pilot study is also meaning an opportunity to compare the wood industry customers in France to the Swedish equivalent. The three wood industry customers were identified by VIDA. Two of the three wood market segments, timber frame house manufacturing and roof truss manufacturing are present within the VIDA group. A delimitation of the pilot study, meaning that only production units or functions within the company were studied and no pilot interview with a glulam manufacturer was undertaken. This delimitation was done in order to save time for the main data collection. Glulam was studied prior to the data collection in France by literature studies.
A general market assessment was done to describe the market and show important indicators for softwood consumption, to stress the magnitude of the market as well as indicate some outlooks for the future.

The more in-depth study of the wood industry customers was conducted in order to learn more about the potential customers. Previously many sawmills in southern part of Sweden has

supplied to France through intermediaries, meaning a potential filter of information (c.f Exportrådet 2006). The interviews with the wood industry customers were also done to get a description of the suppliers' offerings that are typically supplied to customers in the French market, specifically glulam, roof trusses and timber frame houses. The interviews aim was also to get a sense of how relationships between supplier and wood industry customer are described, what kind of logistics solutions that is present and how well the supplied offering are matching the customers' needs. .

The three parts of the study was together done in order to give the most meaningful advice to a sawmilling industry which has limited experience of a potential market.

### 3.3 Macro study

In the general description of the market and outlooks for the future – the macro study – differing sources were used to describe the consumption of softwood today as well as to give information on coming trends. Accordingly, this study considered

- Demographic factors (c.f. FAO 2003a)
- Macroeconomic factors (c.f. FAO 2003a;UNECE 2010a)

The selected sources for this material is FAO Food and Agriculture Organization of the United Nations and UNECE (United Nations Economic Commission for Europe), which are recognized sources of reliable information.

Secondary data in form of demographic and macroeconomic factors affecting consumption of softwood and flows of softwood in the past years was collected in order to describe the market in general terms.

Building of housing and, more accurately, building of houses with wood, is an important driver of softwood consumption. Hence data of wood in building in general and building of houses was collected from different sources. Given this, the study considered

- Building activity (c.f. UNECE 2010a)

Building with wood can be altered by political movements, such as an expressed need to use more wood to store $CO_2$. Building with wood is a focus area for the wood promotion campaigns and could have a potentially large impact of softwood consumption; this data was gathered from both official sources and participants of the campaigns. Hence, the study has also considered

- Political movements regarding building and wood (c.f. FAO 2003a;UNECE 2010a)

Data of domestic production of softwood was gathered to analyze the impact of changed domestic production, meaning potentially less favorable situation to export to the country. A supplier of softwood will endure competition from other sawmilling industries as well as the domestic production of softwood. Accordingly, the study considered

- Domestic production and type of sawnwood used (c.f. UNECE 2010b)
- Competitor's movements and operations (c.f. Björheden & Helstad 2005)

## 3.4 Pilot studies and industry visits in Sweden

Before the data collection in France, pilot studies or test interviews were conducted in Sweden. These interviews were done at the same types of wood industries that I studied in France as well as other functions considered important in a sawmilling industry. The purpose of this was to get a general understanding of the companies and to know "their language", as well as to evaluate whether the compiled set of contemplated quality dimensions were considered appropriate.

Since you will only get good at doing interviews by actually doing them, pilot studies can be done in order to get practical experience to be able to do a good interview (Bryman 2008; Kvale 1997). Examples of reasons to do a pilot study:

- Providing experience to the interviewer
- Identify questions that will lead to the same sort of answer for all respondents, i.e. that will not be a variable (e.g. "Is quality important" would not contribute much to the study.)
- Identify questions that make respondents uncomfortable and questions that will raise interest
- Identify questions which are hard to understand and questions that the respondents won't answer
- Identify suitable appropriate chronological order of the questions. (Bryman 2008)

The pilot studies were done at two wood industries in Sweden as well as three additional interviews with other functions considered important in the sawmilling industry, see Table 4. The firms selected were all within the VIDA group. This selection was based purely on the motivation that VIDA was the host company for this dissertation.

*Table 4. The companies or functions pilot interviewed before the data collection in France. Sources: VIDA 2014a; VIDA 2014b, VIDA 2014c and interviews*

| Company/function | Type of business/function | Size, magnitude | Type of raw material used/preferred |
|---|---|---|---|
| **Villa VIDA AB** | Housing | 16 employees. Around 50 houses and apartment blocks annually. | Whitewood, strength graded and planed |
| **VIDA Borgstena AB** | Structural timber, roof trusses | 120 employees. 12 working with roof trusses. ~250.000 $m^3$ softwood annually. | Norway spruce |
| **VIDA Skog AB** | Purchasing organization | Around 3.2 million $m^3$sub bought annually | Norway spruce 80 % and 20 % Pine in own production |
| **Quality manager** | Ensuring quality on VIDA:s products | 1 person in charge of all sawmills' quality | Norway spruce 80 % and 20 % Pine in own production |
| **Sales person** | Conducting sales of softwood mainly to Germany | One of 7 sales person in Sweden, total sold volume is 1.2 million $m^3$ | Selling mainly Norway spruce |

## 3.5 Qualitative study

This study addresses both processes, relations and experiences meaning both hard facts and soft values are important. In order to cover both general descriptions and unexpressed perceptions, a qualitative design approach is considered appropriate.

## 3.6 Sampling methods

### *3.6.1 Purposive sampling in qualitative method and applicability in the study*

The sampling of respondents could be performed as a purposive sampling, meaning that the sampling is carried out in order to meet a certain purpose. In the study, the types of wood industry customers to be interviewed were chosen by the host company. Since a company has some understanding of what type of customers that they want to do business with, and have good history with, the sampling of respondents was not random.

A purposive sampling means that the sampling is not done randomly and neither are the results generalizable for a population. The goal with the sampling in the purposive sampling is to choose strategically suitable cases in order to fulfil the studied questions. Purposive sampling is the most widely used approach for qualitative researchers (Bryman 2008).

One of the most important parts of purposive sampling is a clearly defined criterion to include or exclude a case, in order for the cases to contribute and provide some relevance (Bryman 2008).

### *3.6.2 Snowball sampling methodology and interviewed actors*

Researchers have used the snowball method since the 1930s in order to reach a specific and hard-to-reach population (Cohen & Arieli 2011). The snowball is used as a metaphor for a snowball that is rolled and getting bigger and bigger (Trost 2010). By contacting first stage respondents, the researcher can receive further respondents (stage two respondents etcetera) that potentially can contribute to the study (Goodman 1961). The method is most commonly used for qualitative research, although it is sometimes used in quantitative research (Atkinson & Flink 2001).

Goodman (1961) describes that to start the snowball you draw a random sample from a finite population that is asked to name a number of individuals. In this study knowledge about current key actors that could potentially start the snowball was known early in the study. The same author is also stating that the respondent should be restricted by a specified integer, e.g. “best friends”. The specified integer in the study was “French woodworking industries, suppliers of Swedish softwood to the French market, being able to make interviews in English and later on preferably in the region of the first booked interview.

The criteria for selecting a respondent for the interviews was: having experience of the French market for softwood, being able to conduct interview in Swedish or English. The criteria to select a supplier for interviews was to be supplying softwood from Sweden or Finland, having direct relations with wood industry customers and to be in the west part of France in order to make an interview in practice. For the wood industry customers the criteria for selection were to be working with glulam, roof trusses or timber frame houses and to be situated in the west part of France.

### *3.6.3 Outcome of snowball sampling*

In total six interviews were conducted in France in mid-April 2014. Of them four were with wood industry customers and two were suppliers of softwood, with different ratios of exported Swedish softwood. The telephone interview and two face-to-face interviews were conducted in Sweden (with Supplier C and Trader). Only one of the customers was mainly focusing on one type of production, namely glulam (Customer B). Two other customers had a more diversified production. One of them has production of glulam, timber frame houses, carpentry and impregnation (Customer A). Customer C produces mainly roof trusses, but also timber frame houses. The last customer is designing timber frame houses. See Table 5.

*Table 5. The interviewed actors in the study. Personal semi-structured interviews n=8, telephone interview n=1*

| Type of actor | Location | Function of interviewed person(s) | Magnitude of business | Survey method | Other remarks |
|---|---|---|---|---|---|
| Supplier A | Rochefort-region | Senior Advisor, MD until recently | Around 160 0000 $m^3$ annually. 15 000 $m^3$ inventory | Personal interview | Presence on market since 1976 |
| Supplier B | Bordeaux-region | Managing director | Around 200 000 $m^3$ annually. 50/50% sourcing Swe/Fin | Personal interview | Presence on market since 1997 |
| Supplier C | Stockholm | MD until recently | Previously 200 000+ $m^3$ annually | Personal interview | Worked on French market for 30 years. Former supplier of softwood |
| Trader | Stockholm | Managing director | Varying much, ~3000 $m^3$ annually today, has been 15 000 $^3$+ | Personal interview | 35 years' experience of market. Magnitude of business depending of the markets' profitability for trading |
| Customer A | Poitiers-region | Technical director and former CEO | Top ten biggest of French wood industry customers | Personal interview | Parts of interview translated French to English and vice versa |
| Customer B | Poitiers-region | Mill manager | capacity of 5800 $m^3$ glulam annually | Personal interview | Interview conducted with interpreter |
| Customer C | Angouleme-region | Mill manager of 3 mills | Biggest actor on carpentry in France ~600 $m^3$ softwood consumed per month for carpentry and houses at 1 mill | Personal interview | Very little experience of Scandinavian softwood |
| Customer D | La Rochelle-region | Managing director | Designing around 30 houses each year | Personal interview | Draws houses and calculates, building is conducted by third part (Customer A) |
| Market analytic | Stockholm | Managing director | Deliver analyses to most of Swedish suppliers | Telephone interview | Makes projections and market analyses |

Customer C has very little or no experience of Swedish softwood, Customer D is designing timber frame houses where Customer A is conducting the practical building of the houses, which is illustrated by a dotted line. Supplier C was at the time of interview not active in doing business with Swedish softwood on the French market, although over 30 years of experience of the market. The trader of softwood has few current business interactions at the time of study with wood industry customers, and is not doing business with Customer A-C. Trading softwood to France is low at the moment because of other markets' higher profitability.

Suppliers A and B are mostly sourcing softwood from sawmills in their own organizations; although it is evident that softwood is also bought from external sawmills. This is considered to be done because of 1: your own sawmills cannot supply the volumes of the right product or 2: business opportunities, i.e. the supplier can buy the softwood in a beneficial way from someone else.

### *3.6.4 Interview process*

In order to obtain peoples' experiences and perceptions of the French market, interviews were conducted.

Contact with the respondents in the study was made by telephoning representatives within the sawmilling industry or well-known representatives within the Swedish forest industry in order

to gain information about who could be a suitable further contact. Over 30 telephone calls in order to get in touch with interview respondents were made.

After identifying the potential respondents, I made telephone contact with the potential respondent and asked for an interview. Six of the nine total interviews were established in this way. Furthermore, via a well-respected sector representative and a consultant that is familiar with the French wood industry as well as the French language, contacts were made and interviews were set up with an additional three wood industry customers in the western part of France.

The dates and time for interviews were fixed according to 1) the respondents will 2) the time period for the trip to France.

The interviews followed both thematic open ended questions (see Table below), which were complemented by specific and detailed questions that outlined in the Appendix.

The questions asked at the interviews were open-ended. This means that the answer can be quite long on a quite short question and it leaves space for unusual and unexpected answers meaning that the researcher can receive an answer that were not first expected (Bryman 2008). By open ended questions the researcher can receive information on how important different questions are for the respondents (Bryman 2008).

Interviews were stated to be around 50 minutes, given the experience from pilot interviews. At the time of interview, the duration for interviews was a bit longer, around 1 hour. After taping the interviews, they were transcribed and analysed.

Since the studied questions may be in the area of business secrets, regarding e.g. customer relations, business intelligence, price sensitivity, origin of raw material etcetera, ethical considerations are of great importance. Not only to be able to get respondents in order to answer the study's questions but to maintain good overall relations. A set of ethical considerations and how this is dealt with is listed below.

The interviews are anonymous. This means that the name of the companies will not be stated and each respondent will be given a neutral name. In order to reflect the reliability of the respondent, the magnitude of their business and how long they have been working on the French market for softwood will be given. It is possible to "back-track" some of the respondents by logic thinking and some research, although it is considered inappropriate in this study to state feign figures, i.e. the reliability of the respondents would be incorrect.

The interviews were recorded for several reasons. Own experiences tells that it is hard to conduct interviews alone, while simultaneously writing down everything that is said. Recording of interviews is also useful in order to analyse the respondents' choice of words and intonation, as well as being able to listen to your own interview technique and improve it (Trost 2005). Before the interview, the aim of the study was stated as well as presenting the host company and expected type of results. There was also a question of approval prior to recording.

The interview guides for both wood industry customers and the other softwood actors are found in Appendix 2 and 3.

## 3.7 Interview questions

In order to be able to catch the complexities that are considered to be present in relations and why a buyer is choosing one supplier over the other, interviews have been considered an appropriate research approach in the sawmill sector (Hugosson & McCluskey, 2008; Stendahl et al, 2013). As outlined before, suppliers, customers and an intermediary were purposefully sampled for interviews since they are all considered to provide to the overall picture on how their relationships work and what is demanded/appreciated for French wood industry customers in terms of product and service quality.

The detailed questionnaire for the interviews was compiled from the sources Toivonen et al. (2005), Hansen et al. (1996), FSS et al. (1994) as well as own considerations together with considerations from test interviews. The questionnaire were benchmarked and revised after considerations from people active in supplying softwood to different markets.
The final interview guide was compiled of three dimensions; wood characteristics, perceived quality and service quality with the subtitles service reliability and responsiveness. Since the lumber characteristics are the most important dimension for the softwood customers (Hansen et al. 1996), questions related to this dimension are given most space.

It is noted that some of the notions about quality dimensions are also found concepts about added value in CPV theory For example, being reliable as supplier and to conduct fast deliveries. Important services like just-time-deliveries are often mentioned in the context of the offering (Hugosson & McCluskey 2009). Furthermore, the customers perception of value of an offering should be considered in a comprehensive way, meaning that is should include the suppliers' friendliness, trustworthiness and timeliness (Hugosson & McCluskey 2009). These dimensions can also be found in the service quality.

The detailed questionnaire was translated into French in order to avoid misunderstandings of special wood phrases, if the respondent does not have the English needed to fully understand the questions.

In the interviews, thematic questions were asked (see Table 6) in order to start a discussion that aimed at covering the more detailed set of questions outlined in the Appendixes. At the end of the interviews, the taken notes were checked against the detailed questions to make sure that these were covered.

*Table 6. Thematic questions for the interviews with softwood actors in the study*

| Thematic questions | Belong to this theoretical concept | Understanding of |
|---|---|---|
| What is the history of the company? | The offering | How the market works, what is valued by customers |
| How do you describe relations between suppliers and wood industry customers? | CPV | Relationship interactions |
| What are you offering? | The offering | Wanted softwood by customers/characteristics of softwood in France |
| What is most important on the French market? | Quality/The offering/CPV | Logistics, relations, wanted quality dimensions |
| What are your/the French wood industry customers' perceptions of Nordic softwood? | CPV | The perceptions about softwood from the Nordic countries |

### 3.8 Interview analysis

The intent of the interview analysis was to assess the types of relationships and softwood that are required by wood industry customers in the French market as well as how a supplier of softwood should work with service in order to please the customer. Accordingly, the interview material was assessed using concepts about customers' perception of value as well as other aspects than the product itself, specifically concepts about wood characteristics and product quality. Some of the mentioned quality dimensions can be found in the added value of CPV, like being reliable as supplier and to conduct fast deliveries. Important services like just-time-deliveries are often mentioned in the context of the offering (Hugosson & McCluskey 2009). Furthermore, the customer's perception of value of an offering should be considered in a comprehensive way, meaning that it should include the suppliers' friendliness, trustworthiness and timeliness (Hugosson & McCluskey 2009). These dimensions can also be found in the service quality.

### 3.9 Ethical aspects

The approach taken to ensure ethics in the study was:

- The respondents are anonymous i.e. given a fictive name when cited in the results
- The purpose of study and the aim with the questions were explained to respondents
- Respondents were asked if it was acceptable to record interviews
- Information given that was considered business secrets kept apart from study

And, common 'farmer' sense was also used to ensure that people and their material were treated with integrity.

### 3.10 Reliability and validity

Reliability is considering whether another study would mean the same results (Bryman 2008).

It is noted that this study used personal contacts in order to acquire both relevant respondents who had a deep understanding and experience of the French timber market. This gives reliability in the sense of information and is relevant for this study. However, it may mean lower replicability in the sense that another study about the French market would probably have different respondents, and therefore may lead to different results.

Reliability of at least product quality dimensions was improved in the pre-study in terms of production visits, i.e. seeing in practice what type of wood that is used and asking if different quality dimensions are appreciated or not accepted.

In general, accepted methods have been used and the used interview guide is presented in Appendix meaning the possibility to conduct the same questions at another interview. At the interview, notes were taken as well as recording on portable media.

Validity is meaning an assessment of whether the drawn conclusion that is generated from a survey is correct or not (Bryman 2008). By using correct measures in a study, one can improve the construct validity. The questionnaire was given its final shape after considerations from VIDA as well as people doing softwood business on the French market and other softwood markets.

External validity is referring to the fact that if the results can be generalized in other contexts (Bryman 2008). Given the limitations in the study and analyzed type of products, the results are most likely not to be generally applicable for other main softwood markets, except Spain that seem to have similar cultural barriers.

# 4 Results

## 4.1 The French market for sawnwood

Factors affecting sawnwood consumption in a market is made up of a wide range of activities, policies and circumstances. The most traditional ones that contribute to the overall picture and also makes up evidence for forecasting future demand, is demographic and economic changes and movements. Consumption is also changed due to political and social movements, which implications are harder to quantify (FAO 2003a; UNECE 2010).

This section will provide figures and arguments of six factors, considered to be influential for the sawnwood market in France (Björheden & Helstad 2005; FAO 2003; UNECE2010). Some of the factors can cancel each other out, e.g. the consumption in the country and the own production, meaning that feasibility to export to the country can remain at status quo. Hence the factors should be considered not isolated and solely, but together as a synthesis. The chapter ends with a synthesis section that analyzes the impact of the factors together.

As discussed in the method (see Section 0), these six factors that affect sawnwood consumption and competitiveness of the sawmilling industry were:

- Demographic factors (c.f. FAO 2003a)
- Macroeconomic factors (c.f. FAO 2003a;UNECE 2010a)
- Building activity (c.f. UNECE 2010a)
- Competitor's movements and operations (c.f. Björheden & Helstad 2005)
- Domestic production and type of sawnwood used (c.f. UNECE 2010b)
- Political movements regarding building and wood (c.f. FAO 2003a;UNECE 2010a)

### *4.1.1 Demographic factors and macroeconomic factors*

A rising population provides basis for a larger total consumption. More significant though is how the rising population is using the commodity analyzed. The per capita consumption is frequently used as an indicator of a country or regions willingness to consume some sort of good (Rennel 2010). The consumption of coniferous sawnwood in France is 0.15 $m^3$/capita, comparable with Sweden's average consumption of almost 0.6 $m^3$/capita – four times more (Anon 2013a). The total population in France was 66 million by 2012, with an annual growth of 0.5 % (World Bank 2014a). The projection made by the World Bank (2014a) indicates an annual growth rate of 0.3 % further on, giving a population of 68 million 2020 and a stagnation of the annual growth rate to 0.2 % until 2050, indicating a population of 73 million.

The GNI (Gross National Income) has steadily increased in France the last decades, with some exceptions due to the financial crisis post-2007, see Figure 1. GNI was previously referred to as GDP (Gross Domestic Product) (World Bank 2014b).

The inflation has been around 2 % in 2011 and 2012, the projection for 2013 were 1.5 % (Anon 2013b).

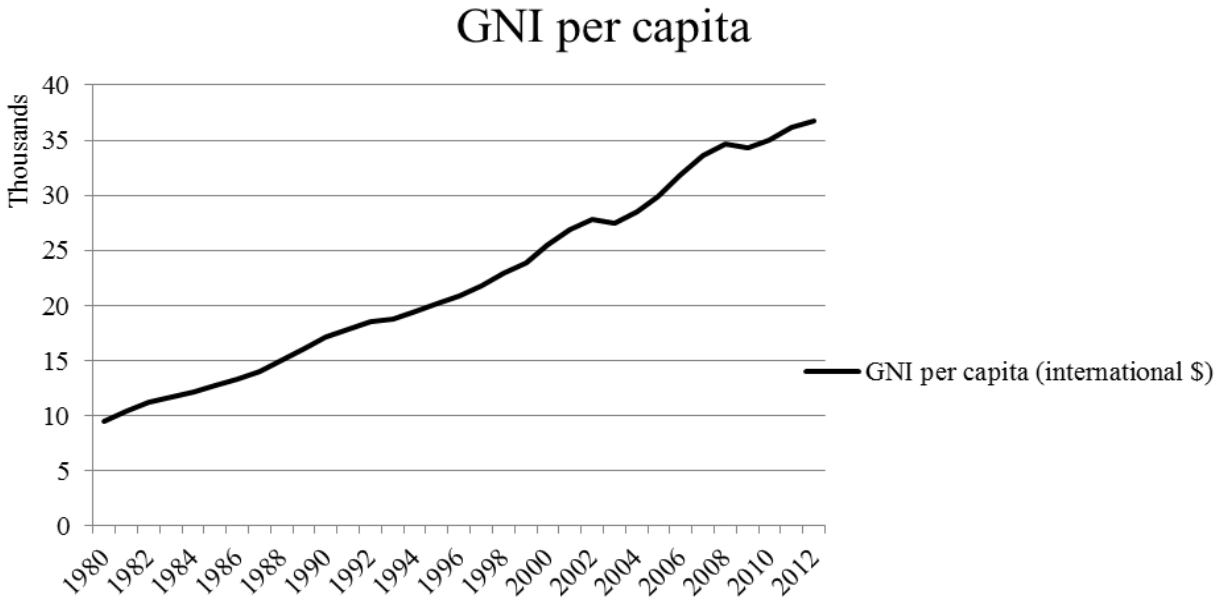


*Figure 1. Gross National Income per capita from 1980 until 2012 (thousands of International $). Source: World Bank (2014b).*

A main driver of sawnwood consumption is the building of houses, and increasing GDP per capita can lead to greater demand for housing (FAO 2003b). In the beginning of the 1980s the annual GDP growth was around 1.5 %, now it has declined and after the financial crisis, the GDP growth was in fact negative, see Figure 2.

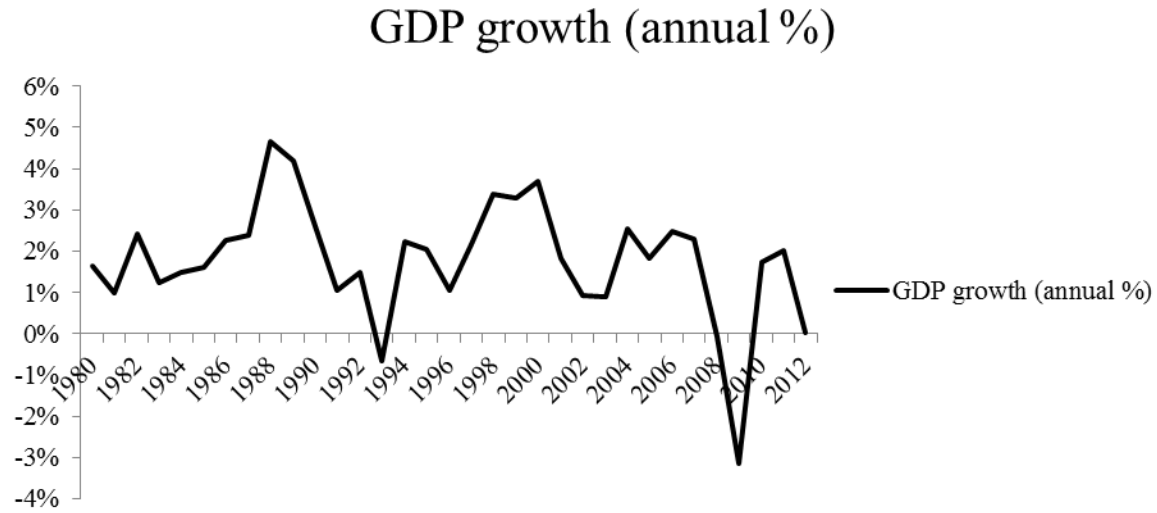


*Figure 2. The annual GDP growth in France from 1980 to 2012 (%). Source: World Bank (2014b).*

### *4.1.2 Forest resources and domestic sawnwood production*

The total domestic production of coniferous sawnwood has been 6-8 million cubic meters since the 1990s, see Figure 3.

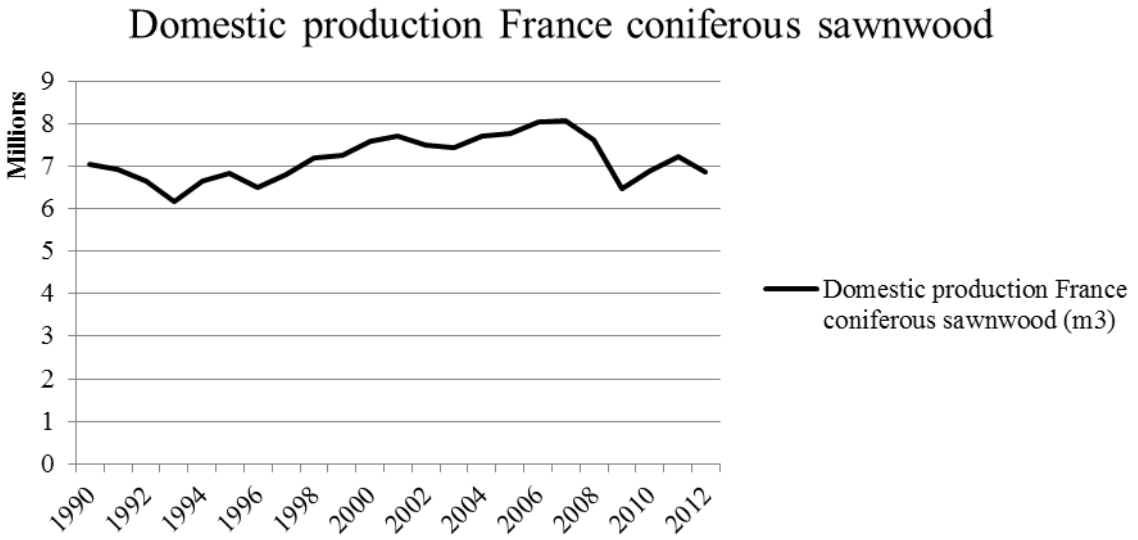


*Figure 3. Domestic production of coniferous sawnwood from 1990 until 2012 in France (millions of $m^3$). Source: FAO (2014b).*

The total apparent consumption (domestic production + imports – exports) of softwood was 8.9 million cubic meters 2012, and the projection for 2013 was on 8.5 million cubic meters. Before the financial crisis, apparent consumption reached a high mark of almost 11 million cubic meters (Anon 2013b).

Most of the harvested area in France is hardwood (61 %) and 50 % of the annual total growth of 88 million $m^3$ are harvested each year. 30 of the 128 species are commonly sawn. France has a long experience of certification by PEFC (Program for Endorsement of Forest Certification Schemes). (French Timber 2014)

The sawmilling industry in France is sawing both hardwood and softwood; most comparable species sawn to the Nordic softwood are spruce and fir from the French forests. The French domestic production of spruce (*Picea Excelsa*) and fir (*Abies alba*) together is 3.9 million $m^3$ annually. The statistics does not separate between the two species. Total area of *Picea Excelsa* and *Abies Alba* forest is 1.4 million hectares in France. (French Timber 2014)

The low profitability in sawnwood business in France has led to underinvestment in the softwood sawmills. The competitiveness deriving from upcoming investments may lead to reduced imports of the softwood that is coming mainly from Germany, Sweden and Finland (UNECE 2010b).

Several markets have their own grading systems, either according to visual appearance or by strength grading. The French visual appearance grading of softwood is between 0 (best quality) and 4 (lowest quality). In the publication “trusses” and “glued laminated timber” are mentioned as end-uses for grade 1-2. (French Timber 2014)

Commercially sold dimensions of softwood and the names they go by are presented in the Appendix 1. Grades according to French rules that are considered suitable for structural timber of Norway spruce are also shown in Appendix 1. (Ideesmaison 2014)

### *4.1.3 Trade flows of sawnwood to France*

Sweden is one of the main exporting countries to France, with a market share of around 15 %, almost the same as Finland. The exports from Sweden to France of coniferous sawnwood have been around 450.000 cubic meters annually with peaks of almost 700.000 in 2005; see Figure 4 (FAO 2014b).

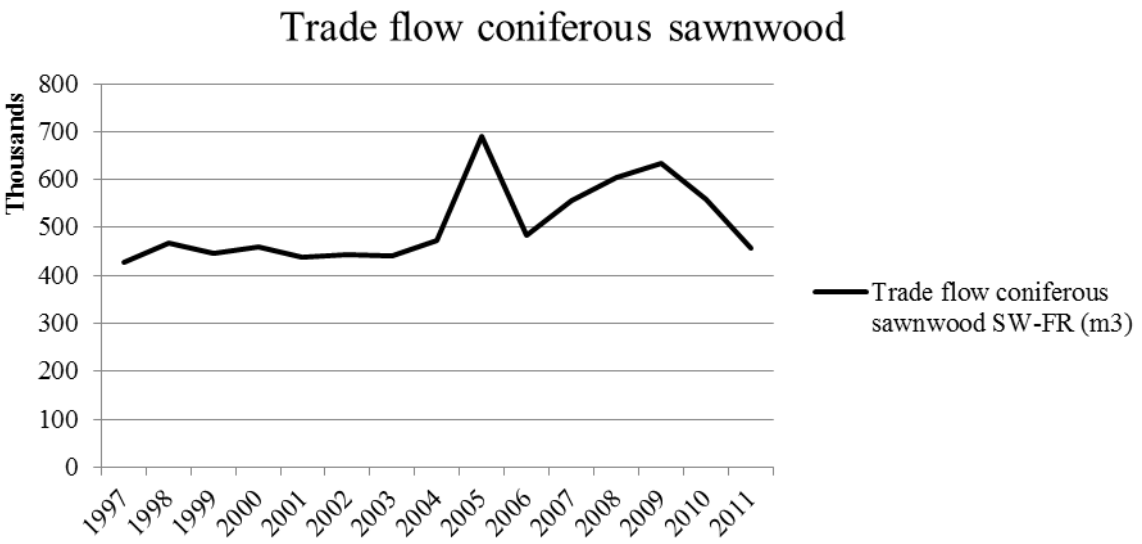


*Figure 4. Trade flow of coniferous sawnwood from 1997-2011 between Sweden - France (thousands of $m^3$). Source: FAO (2014b).*

The import of coniferous sawnwood in France has increased from around 2 million cubic meters 1997 to around 2.5 million cubic meters in 2012, with a peak of 4 million cubic meters 2007, see Figure 5.

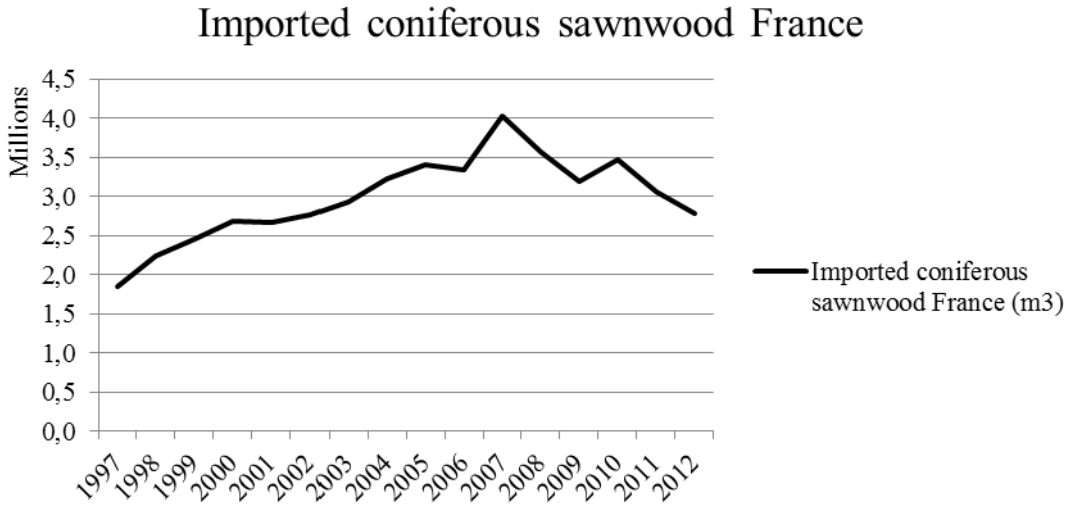


*Figure 5. Total imports of coniferous sawnwood to France from 2003 to 2012 (millions of $m^3$). Source: FAO (2014b).*

The top-three exporting countries of sawn softwood to France is Germany, Finland and Sweden. Germany's export volumes are decreasing while Sweden and Finland have had almost the same market share since 2006; see Figure 6. Sweden's market share has been around 15 % from 2006 to 2013 (Woodstat 2014).

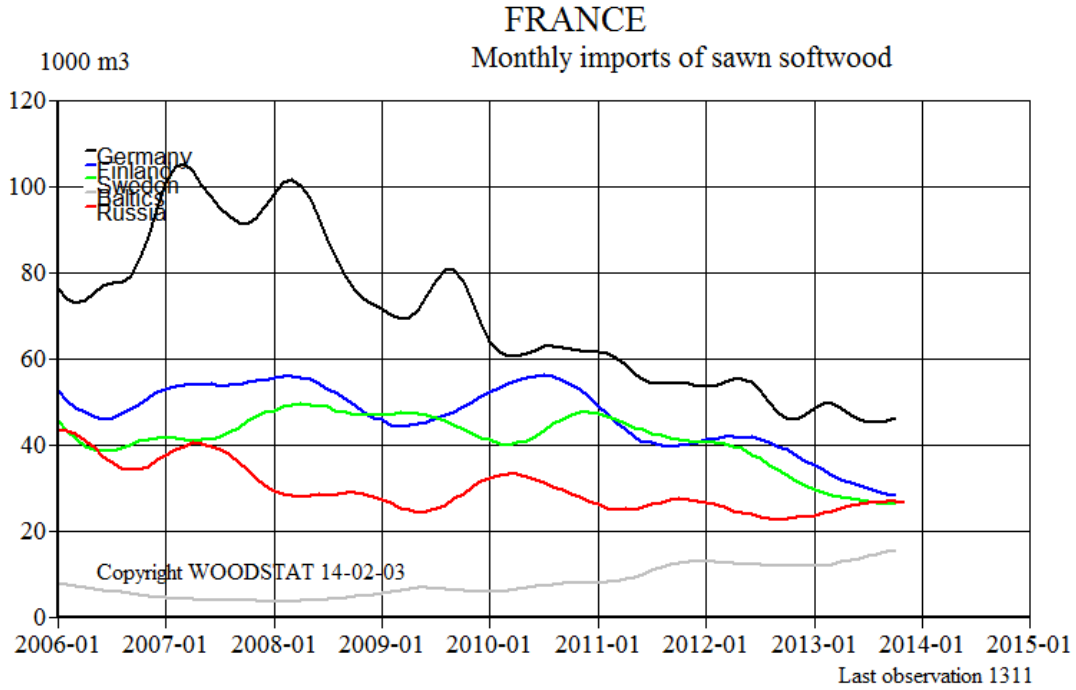


*Figure 6. Five countries and regions monthly exports to France of soft sawnwood. Black = Germany, blue = Finland, green = Sweden, grey = Baltics and red = Russia (1000 m3). Reproduced with allowance from Woodstat (2014).*

### *4.1.4 Construction factors – drivers of sawnwood consumption*

The most important driver for sawnwood consumption is the activity in the construction sector (UNECE 2010). The annual housing starts have had a negative trend since 2006, following a rise from 2009 to 2012 see Figure 7. The last figures of finished dwellings were 421.306 in 2011, 346.500 in 2012 and 340.000 (projection) in 2013 (Anon 2013b). The decline in house building is explained mainly by the financial crisis, which is still present.

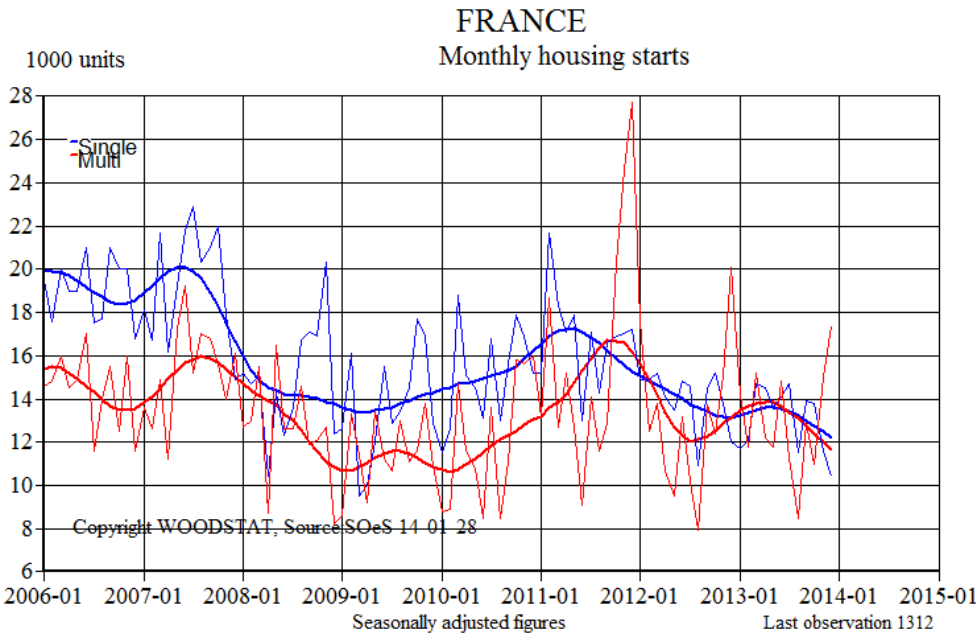


*Figure 7. Housing starts in France, divided in single (blue) and multi-houses (red) (1000 units). Reproduced with allowance from Woodstat (2014).*

Wood in new housing starts varies across France. In total the percentage of wood in new single houses is 12 % in average in France. In the eastern part of France, building with wood is more common, indicating almost a 20 % share of wood in single houses, while other parts of France have around 6 %. The general building activity went down between 2011 and 2012, when total building of single houses went down by 14 % (138 846 to 118 956), and the single houses built with wood went down 9 % (15 685 to 14 320), see Figure 8. Timber frames are the most common way to build, with 73 % of the building with wood. (Anon 2013c)

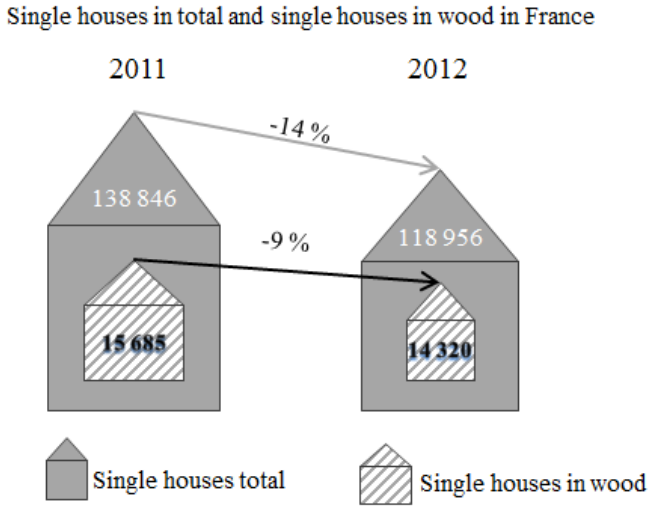


*Figure 8. Number of single houses and single houses in wood built in France year 2011 and 2012. Adapted from Anon. (2013c).*

In 2010, consumption of sawnwood in France was 23.82 million RWE (Round Wood Equivalent) with a projected increase of around 3 % to 24.47 million RWE by year 2030. The 3 % increase is the case in the reference scenario, meaning that current policies are not changed and the trends continues. (EFSOS 2010)

### *4.1.5 Swedish and Finnish actors on the French market*

The exporting countries of softwood that can be considered to be competing with the similar types of products are mainly Finland (Toivonen et al. 2005), which is exporting the same species and are considered to be providing with high product quality. The main Finnish actors are Metsä Wood and UPM Timber.

The main actors solely or partly situated with sawmills in Sweden 2014 are Setra, Stora Enso Timber and SCA Timber. All three have sales units in France and have quite a long history in France.

In 2011 SCA Timber bought the company PLF (Panneux et Lambris de France) with a planing industry as well as a present distribution network. The subcontracted PLF handles some 70 000 cubic meters of softwood for further processing each year and the terminal in Rochefort handles some 160.000 cubic meters softwood each year. (SCA 2014)

Most important customers for the Swedish exported whitewood to France are the glulam manufacturers. Of Setra's exported volume to France, two thirds are Norwegian spruce to glulam manufacturers (Setra 2013).

### *4.1.6 Policy decisions affecting the sawmilling industry*

Policies can be both positive and negative to the sawmilling industry (c.f. FAO 2005). A policy that promotes the use of wood as construction material has the potential to boost demand for sawnwood, while others have the potential to raise transaction costs or lower the demand for sawnwood. The impact on consumption of a policy decision is hard to quantify (c.f. FAO 2005); hence the probable impact for the sawmilling industry will be provided.

<u>Policies leading to increased demand for sawnwood</u>

France has had national initiatives in order to promote the use of wood in construction. The arguments to choose wood are mostly on environmental grounds. One campaign called *Bois – Construction – Environment* started 1996 and was saying basically "use wood, it saves the climate". Stakeholders in the initiative were the French government and professional organizations. (Jonsson 2009)

In 2004 the promotion campaign for wood, *Le bois – c'est essentiel* was launched as a partnership between the Swedish Forest Industry and its French equivalent CNDB (Comité National pour le Dévelopement du Bois). The mission was to promote the use of wood by e.g. advertising, seminars and providing facts about wood. (Jonsson 2009)

The campaign *Le bois – c'est essentiel* has now got its successor in the shape of an information campaign by Swedish Wood (part of the Swedish Forest Industries) together with the French business association CODIFAB (Comité Professionnel de Développement des Industries Francaises de l'Ameublement et du Bois). The slogan is "I say YES to wood to say NO to $CO_2$!" and it uses a home site, information brochures, commercials and seminars in order to get the customers to choose wood. (Svenskt Trä 2012)

Even though it is hard to measure the impact of promotion campaigns, there are examples e.g. from Austria where successful wood promotion programs have led to a sawnwood consumption of a high 0.51 $m^3$/capita (UNECE 2009).

All these campaigns have the overall goal to increase the use of wood. The share of wood in buildings has reduced less than the overall building activity (Anon 2013c). This could be explained by policies that promote wood as a material that stores carbon dioxide and the fact that wood is warmer than concrete and steel, and hence better to isolate old, cold buildings.

### *4.1.7 Synthesis and analysis of the macro factors*

The economic crisis has lowered general consumption as well as the consumption of sawnwood. The crisis still have some grasp on France but there are indications on that the financial growth is increasing. Sweden have had quite stable exporting volumes to France, indicating that the customers are reliable and we can expect at least the same amount of volumes, given the fact that the GDP growth will be the projected i.e. around 0.9 % in 2014 and 1.5 % annually in 2015 (OECD 2014). This in fact with the rising concern on environmental issues, and policies on using wood as a way to save climate speaks in favor of wood.

The UNECE (2010) projection of sawnwood consumption in France is 3 % increase until 2030, given the present state of policies. If policies positive to sawnwood consumption, e.g. use more wood in building, becomes fortunate, this figure can be larger.

France has launched initiatives to increase utilization of its own raw material i.e. sawing your own softwood and selling it on your own market. The imports share of total consumption is around 24 %. Swedish exported volumes are softwood and the most common species in France is made up of hardwood, as well as harvested area (61 %). The pine in France generally have significantly faster growth than typical Swedish pine, indicating different end-uses. Maritime Pine, covering 10 % of French forests (French Timber 2014) is usually spirally-grown and used for mainly pulp and sawn for some lower end-uses; packaging and pallets and some for DIY.

Sweden's most likely competitor as exporter of softwood is Finland, which has the same type of product quality. The German sawmilling industry has decreased their exports to France, probably because of domestic deliveries due to Germany's faster economic recovery. When the financial crisis ends in France, the softwood market is anticipated to grow significantly.

## 4.2 Results and reflections from pilot studies

To get an understanding of the general idea of the VIDA Group, one week was spent at their facilities in the southern part of Sweden. The purpose was to get to know their products, their sawmills, their key personnel, their distribution and inventory solutions, important softwood quality dimensions and to do pilot studies with a house maker and a roof truss manufacturer and three other functions. Five pilot interviews were conducted, along with general discussions with mostly white collar workers.

### *4.2.1 Quality aspects in the forest to the sawmill*

Since the potential product quality of a piece of sawnwood is decided already in the forest where the harvester cuts the tree, a quality related interview was conducted with a managing director at the purchasing organization of VIDA. My reflection on quality in harvesting operations and purchasing is to provide the timber needed for the corresponding sawmill. In theory this means getting the lengths and dimensions that will optimize the value exchange in the sawmill, without damaging the trees between the felling and transportation to the sawmill.

Different sawmills have different end products, meaning varying solvency for the timber. The price lists are designed to reflect the timber that suits the sawmills' production. By practical reasons, i.e. competition between timber buying industries, this logic is deviated from to get the raw material needed. Intense competition in the southern part of Sweden means you have to be very effective and also good at exploiting market opportunities to get any profitability, when timber is around 70 % of the firms' total costs.

The timber lengths are ultimately decided when handled by the harvester. To steer the production towards what is wanted from the sawmill, a "length specification" is provided to the contractor – giving bonus if the lengths cut are over a certain percentage and a deduction if the lengths are under.

By keeping quality classes 1 and 2 on Norwegian spruce it is anticipated that quality of high timber will be desirable and that the forest owners will focus on quality production of timber forest. A project is started to give recommendations on quality production, with focus on how you as a forest owner can get much timber in your forest.

An area of focus is also to reduce the impacts of long storage time between harvesting and transportation to the industry. After a while insect damage and log blue stain can appear and this will mean lower quality.

Forest certification is considered to have rising interest, and around 70 % of raw material bought is anticipated to be certified by either PEFC or FSC or both. Although much of the volume is certified, the certification can be considered as a transaction cost. Education, controlling, internal auditing, external auditing and the needed actions if you deviate from the certification standards are mentioned as potential costs. It is not regarded that you as a supplier of saw logs to the sawmilling industry get the premium needed to cover these costs.

Other mentioned 'quality dimensions' are good personnel and doing a great work in the field – not damaging the soil and leaving big tracks after harvesting.

Summarized, quality dimensions of timber in the forest to the sawmill include:

- Providing what the sawmill asks for
- Not damaging the raw material
- Certification (FSC/PEFC)

The dimension that is considered important in the study for end-users regarding the sourcing of raw material is if the forest are certified.

### *4.2.2 Pilot study with quality manager*

VIDA:s production is focused on structural timber. 80 % of the production of around 1.2 million cubic meters is Norwegian spruce and most of it is strength graded mechanically. Around 90 % of the produced whitewood is planed. Given this, around 860 000 cubic meters of whitewood are planed.

The most common used strength grading is C24 according to standard SS-EN 338. C24 means a characteristic bending strength of 24 MPa (mega Pascal) (Svenskt Trä 2014a).

The dimensions that are considered important in the study and used in the interviews are what type of strength grading is appropriate and what degree of further processing that is demanded by wood industry customers.

### *4.2.3 Pilot study with timber frame house manufacturer*

The house manufacturer is producing a "weather sealed frame" meaning a floor structure, walls and roof trusses – a complete frame with doors and windows.

The production of a timber frame house is focused on standardization, in order to gain effectiveness in production and building of the house. The around 50 yearly built timber frame houses are transported to the building site in Sweden or its export markets, mainly Switzerland, Germany, Holland and the UK. The timber frame is transported by truck to the building site where other contractors are putting together the house.

Since a sawmilling industry is traditionally focused on production optimization, a small batch with appropriate lengths and dimensions exact-cut for a small end-user can be undesirable for the sawmilling industry. A house with a timber frame typically indicates a need of 25-35 cubic meters of softwood per house, which may mean that the sawmilling industry can be unwilling to adhere to the demands of small end users such as house manufacturers that make relatively few houses.

The production of a timber frame for a house can be fast if the pieces brought together are standardized, i.e. the pieces of softwood are pre-cut. If the pieces are exact-cut it is a question of basically nailing them together. If the pieces are not pre-cut the house maker need one person who cuts the softwood that takes time and labour and hence means a cost.

In order to reduce waste and time spent, the dimensional accuracy is highlighted by "tolerance lists" i.e. how much deviation the piece of structural timber can have from the wanted width and thickness.

In the production of a timber frame, the frame needs to hold for pressure from weather and wind. Hence the structural timber for this purpose is either visually or mechanically strength-graded. Most of the used structural timber is used "hidden" behind a plasterboard or equivalent. Therefore it can be argued that as long as the structural timber has the appropriate strength grading visual defects like vane could be tolerated.

For visual applications like decking the appearance is of more concern and the origin of the raw material can mean better or worse 'quality'. If the knots are too many and too big, the paint that will later be used may not cover the knots that are considered negative for the customer. It has been hard to get the needed visual quality from own sawmills and the house company has bought products like decking from other producers from the northern part of Sweden.

In order to export timber frame houses to other markets it needs to comply with the actual markets' rules, like DIN standards and those markets' strength grading rules.

In the UK, certification according to FSC (Forest Stewardship Council) is considered as an entrance ticket, meaning that you cannot sell a timber frame house unless the raw material is FSC certified.

Elements that are considered important for a supplier of softwood to a timber frame house manufacturer

- Product elements of the offering from a supplier of softwood
  - Exact cut structural timber that rationalize production
  - Strength-graded timber according to the markets' standards
  - Having dimensional accuracy over time
  - Certification according to PEFC (The Programme for the Endorsement of Forest Certification) or FSC
- Logistics element of the offering from a supplier of softwood
  - Possibility to deliver small quantities
  - Possibility to deliver within a short time ~2 weeks
- Advice
  - Information about the right use, i.e. you can use softwood with some visual defects as long as strength grading is the right one in the timber frame elements – leading to reduced waste

#### *4.2.4 Pilot study with roof truss manufacturer*

The rationale for making roof trusses industrially is based upon the fact that the house builders can save time at the site for construction if the roof trusses are premade and transported to the building site. Carpentry nowadays is considered to become more of a question of putting elements together, rather than finding unique solutions for each situation. Hence the putting together should go fast, in order to save time and money.

Roof trusses at this manufacturer are made mostly with planed C24 whitewood of at least 45 mm thickness. The planing is done in order to achieve accurate dimensional accuracy. The fact that a planer is often more or less integrated in typical Swedish sawmills is also considered to be a reason. The dimensional accuracy will mean that the connectors – holding the pieces of softwood together – will fit accordingly and production of roof trusses will go fast. Usually the pieces of softwood will be cut at a saw placed at the site for roof truss manufacturing; hence the accuracy in length is not as important as in width.

It is important that the finished roof trusses will fit for its intended use. Due to customers' varying quality in descriptions and drawings of the roof trusses this may be a source for claims. Furthermore blue stain is not tolerated, since it will give an impression of damaged and unstable softwood.

- Product elements
  - Strength graded softwood
  - Planed softwood
  - Dimensional accuracy regarding thickness

### 4.3 Results and findings from softwood actors in Sweden and France

Here I present my findings regarding the French market and important product and service quality dimensions. Data sources are semi-structured interviews with softwood actors and follow-up contacts with ditto. For projections of the softwood market in France, a telephone interview with a market analyst has been conducted. The results are presented both as quotes as well as summarized in written form.

## 4.4 General considerations for the market

### *4.4.1 Present big suppliers with sourcing from Nordic countries*

There are several sawmilling industries from Sweden which are exporting to France, usually through intermediaries. The largest Nordic actors, with raw material sourced from Sweden and Finland are Setra, SCA Timber, Stora Enso Timber, Metsä Wood and UPM Timber. These five have own distribution and SCA Timber and Metsä Wood has also further processing in France.

Exported volumes from Sweden to France, according to interviews are around 420 000 $m^3$ annually, of which SCA has stood for around 40-50 % some years. The delivered volumes from the main Swedish actors are stable, despite economic crises of different severity.

### *4.4.2 France – a spruce market*

The market for softwood in France is 90-95 % whitewood (Norway spruce). Redwood (Scots pine) is used for some special uses, e.g. impregnated used as cladding on agricultural buildings or impregnated as glulam on some French islands where humidity is high. There is also a market for redwood in the southern part of France.

*"…they use redwood there [southern part of France] since they are used to it, that's what matters!"* Supplier C

*"Traditionally the French market has been big on the spruce side, but of course these things can change, just look at Belgium..."* Trader

*"…the market is 90 % spruce for everyone, unfortunately because I want to introduce more redwood"* Supplier B.

*"…a spruce market to 95 %..."* – Supplier C

*"…they use spruce in their shutters and paint it with plastic color meaning it will rot, although redwood would have been much better"* Trader

### *4.4.3 Important end-users of softwood in France*

Important typical end-users in France are glulam manufacturers, roof truss manufacturers, timber frame house manufacturers, planing mills, timber merchants and the Do It Yourself (DIY) market. Each of these has special requirements regarding mainly product quality.

Of greatest importance for the Swedish sawmilling industry are the glulam manufacturers which need slow-grown spruce and planing mills that often need slow-grown softwood that does not bend and without too big knots used for visual applications. There is also a "quality market" at timber merchants where U/S and V are sold. Timber merchants are aware of the quality and prefer Swedish and Finnish wood, but are mainly buying on price.

Roof truss manufacturers are sourcing cheap low quality softwood from mainly Germany and France, DIY is very consolidated in France and buys mostly French softwood. For timber frame houses mostly strength graded and planed whitewood is used, and sometimes from Sweden.

Findings from interviews are somewhat differing from the conclusions made in Exportrådet (2006). In Exportrådets study, there was a bigger focus on the large and growing consumers of

softwood, mainly the DIY and professional wholesalers. “Prefab houses” was the customer listed with lowest “attractiveness”, while DIY had highest attractiveness. This is most probably due to the scale of DIY, i.e. Europe’s third largest DIY market, rather than the potential profitability of supplying to the much consolidated French DIY.

The end-users of softwood that are covered in the study are presented in Figure 10. In the segment joinery one can find e.g. window producers and door producers.

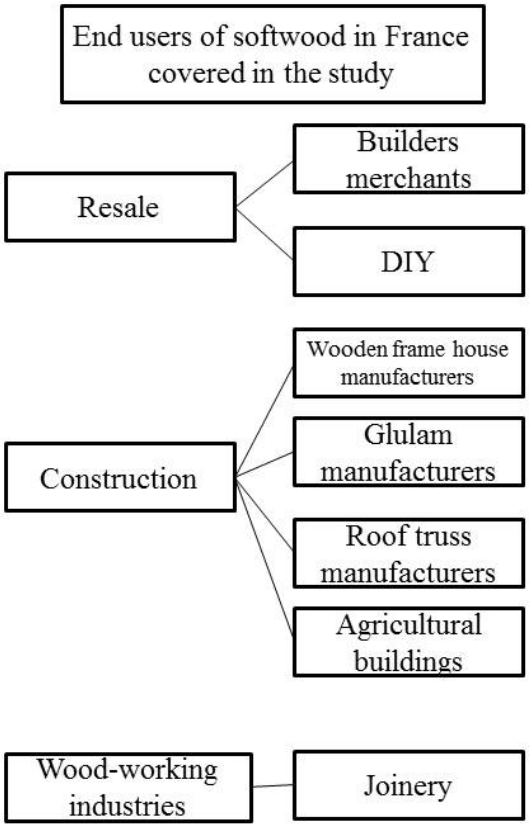


*Figure 10. The end-users covered to different extent in the study.*

## 4.5 Product quality

### *4.5.1 Glulam manufacturers*

A big typical end-user for Swedish sawmilling industries is glulam manufacturers, which have had a tradition of buying spruce from the Nordic countries. These customers seem to value the ‘high quality’ of spruce from the northern part of the Nordic countries; Sweden, Finland and Norway. This is mainly because of the small annual ring width due to the generally slow growth and the small size of knots. The small annual ring width will mean that the softwood will have a less tendency to bend and the production of glulam will be easier. Some of the glulam will end up with a visual appearance, e.g. in a shopping mall, meaning that the size and appearance of knots can be more important, along with a planed and smooth surface.

Since the glulam manufacturers finger-joint their softwood pieces the length is not so important. The accuracy in dimension is important though – especially when dimension is smaller than stated, i.e. if you want 50 mm thickness for the lamellas for your production it may be OK with 51 mm but not 49 mm. Usually the glulam manufacturers will buy spruce with some millimeters extra and have it planed by themselves, since their own planer is very accurate. The knots cannot be too big or too many. The finger-jointing procedure means that a

knot is unwanted in the finger-joint, since it will make the joint less stable. Vane is not accepted since the finished glulam need to have a 'solid appearance' i.e. a vane will mean a break of its solid structure.

*"...actually for them dimensional accuracy is only important on the thickness, length is not so important since they finger-joint the pieces..."* – Supplier A

*"Glulam manufacturers need straight wood, no vane at all, no blue stain, dried to 12 %, lengths are unnecessary, 90 % is 50 mm, 10 % 38 mm. Widths are 100, ..., 200 and 225. The dimension must be exact at the right moisture content."* – Supplier A

Strength graded softwood is important for the glulam manufacturers since the construction should hold for heavy loads. Hence the softwood for glulam is strength graded, according to C24 or C30. Since the bending strength is so important, extra visual control (size and location of knots in the piece of softwood) is carried out at the manufactory. Parts with unaccepted defects, like dead knots will be cut and not used for the glulam.

*"...blue stain, vane and pocket resin is not OK for glulam. And strength grade C24/C30 is 50/50, C30 is growing since the price does not differ too much and you can construct beams with the same bearing strength with less wood with C30. But today not so many suppliers can supply big volumes of C30..."* – Supplier B

The quality grading delivered to glulam manufacturers are told to be sort C (according to "the Blue book"). Norway spruce delivered to French glulam manufacturers should be kiln dried to 12 % moisture content.

For glulam manufacturers, the production seems to be stable, with the volumes distributed evenly throughout the year, except for bigger projects when softwood consumption temporarily peaks. Given the even production over the year, the ordered quantity of softwood are stable and goes in few dimensions, meaning that transportation for the supplier is effective.

*"...you know, they [customer B] are a very good customer for us. The deliveries are stable and we only need one dimension per truck which makes it effective."* – Supplier A

### *4.5.2 Roof truss manufacturers and timber frame house manufacturers*

The studied roof truss manufacturers are buying mainly on price and hence softwood of differing quality levels is sourced mainly from the nearby regions and countries. This picture is also confirmed by big suppliers of softwood in France.

*"We buy softwood from Belgium, Germany and France. No softwood from Scandinavia because of price."* – Customer C

*"Softwood for roof trusses is nothing that interests the Nordic sawmills, because it's a low price product that is sold in dips that can come from anywhere."* – Supplier C

*"Coniferous tree for roof trusses. Sometimes oak in roof trusses because we got a lot of oak in our country. We want to use this."* – Customer A

There are CE standards for roof trusses, saying that the softwood should be dried to 22 % moisture content, and have a dimensional accuracy of +/- 2 mm. Given the high price

sensitivity, building is sometimes carried out with undried wood. Meaning that the consumers of softwood can buy undried softwood from the sawmill and let it dry outside. Given the varying weather throughout the year and lack of moisture content control, it is unsure if the CE standard is always met.

*"Normally the CE mark says we have to buy timber around 22 % of humidity but price [for dried wood] is not the same and the sun will dry it for free."* – Customer C

*"Finland and Sweden are in advance of the French market building roof trusses with bigger dimensions. Not using the right type of product at the moment, and even undried wood and that is not good."* – Supplier B

None of the softwood observed at the two customers making roof trusses has been Scandinavian.

*"Timber comes mostly from "Black Forest" in Germany, and also the French sawmills source their raw material from Germany, which are sawn and supplied to us."* – Customer C

Generally speaking building roof trusses in France means small dimensions (thickness 36 mm), unplaned wood and strength graded and undried to different extent.

*"C24 is used to make sure of strength, sometimes C18. Dimensions are thickness 36 mm and width 60 mm, 97 mm, 112 mm, 122 mm, 172 mm and 222 mm depending on snow, wind, fire and size between walls."* – Customer C

*"…36 mm in industrial carpentry, unplaned. 70 mm in traditional [carpentry]. We are obliged to use 45 mm if the truss is more than 15 meter large."* – Customer A

*"0.5 lengths are used to reduce waste, 3, 3.5, 4, 4.5, 5, 5.5, 6 meters. 3.2, 3.4 etcetera will give a lot of waste."* – Customer C

*"The softwood is strength graded when we get it, but we can see that one piece of wood can be lower than the actual grade. People should not only work as a robot, we say to them "your work is important"* – Customer C

The most common distance between roof trusses in France is 600 mm, half of the normal cc distance in Sweden of 1200 mm. Sometimes 900 mm cc used. This will mean more roof trusses on a given house, comparing to Sweden and that the bearing capacity on each roof truss may be smaller. The shorter cc distance provides some rationale for the small dimension on roof trusses in France.

Germany is Europe's biggest producer of softwood. Typically the wood industry that makes *charpentes industrielle* – roof trusses in wood for use in housing that are put together by plates will generally speaking buy on price. Hence the nearby located French or German sawmills sourcing fast-grown spruce from e.g. "the Black Forest" in Germany seem to be the typical choice.

*The proximity to France and its [Germany's] highly effective and modern sawmills mean they can provide softwood to a competitive price in France*. – Market analytic

Building of timber frame houses will mean that most of the structural timber will be hidden and covered by some sort of protecting board, like an OSB board. The fact of non-visual softwood will mean that the visual appearance is less important than bending strength. The observed softwood is strength graded according to C24 or sometimes C18 and planed.

*"..you can have some vane, if it's not perfectly rectangle it's not a problem"* – Customer A

*"…around 100 $m^3$ consumed softwood per month in C24 for wooden frame houses…"* – Customer C

Also timber frame houses is a price pressed business.

*"Quality is important but the end-customer will mostly look at the bottom line"* – Customer C

*"they use 45 x 145 planed, 45 x 90 and 45 x 195… It doesn't need to be that high quality. C24 and low price. …and I know there is some C18 as well."* – Supplier C

Given the fact that timber frame house manufacturers are told to have been using softwood from the southern part of Sweden as well as observed to have been doing so, findings in the study is contradictory to Exportrådet (2006) where 'house manufacturers' was given lowest 'attractiveness'. By the time of their study, prefab houses was not common but now building with wood has increased significantly and of the buildings in wood in single houses, 73 % is with 'wooden frames'.

### *4.5.3 Certification of softwood*

The most common certification in France is PEFC. This is stated by all the respondents and is also evident from homepages, brochures etcetera. Over 90 % of wood is certified according to PEFC.

*"…FSC is used only in some DIY…"* – Supplier B

All the interviewed suppliers say that there is no premium for PEFC certified softwood on the French market. It can be seen as an "entry ticket", without it you won't get access, and you have to pay for it yourself.

*"PEFC is very important because of environmental, couldn't sell without certification. Everyone is informed, websites, timber shows, workshops. Not to sell higher, most internal policy, want to get good view. Much about image."* – Customer C

The reasons mentioned for the predominance of PEFC is the fact that France' own forest is certified according to PEFC.

*"Certification is becoming more and more important each day. Public building means that you want it to be certified. PEFC are what matters in French forests. A real mess that PEFC, what forest is badly managed in Sweden or Finland? We don't need that to make sure it's properly managed. It's just to collect money. Premium? Forget it! It has not been a premium since day two. In sawn softwood you will not get a penny for certification. Having two is a joke."* – Supplier C

Uncertified wood is rare; some timber merchants in France are mentioned in the interviews to buy it.

## 4.6 Service quality

### *4.6.1 Fast deliveries and importance of service*

Typically, being able to deliver softwood fast is an important quality dimension, and may be a basis for selecting a particular supplier. Saying "fast" typically means in one day.

*"If we want a pack of softwood, we can ask [Supplier A] and we will get a truck the same day since the inventory is one hour away. This is important for us." – Customer* A

*"If Customer B wants this dimension it will only take some hours for the truck to get to him, he is some 2.5 hours' drive away"* – Supplier A

*"We can serve all customers in 24h guarantee, service is very important."* – Supplier B

*"Since the port is in Rochefort we can be supplied in one day. We can ask them in the morning and get it the same day. For us, "fast" can mean one day!"* – Customer A

*"Fast deliveries are becoming more and more important… and precision in delivery time is very important"* – Trader

*"All dimensions are in stock and I can deliver next day, this is important to customers."* – Supplier A

*"Try to get orders every month. One or two suppliers have to order a month before, some 2-3 weeks in advance. Sometime very special, like special dimension it can be done in 1 week.* – Customer C

*"…it's good with short transport distance from supplier. We get one – two trucks per week. Mostly from [Supplier A]. Best sawmill, good quality but high price."* – Customer B

### *4.6.2 Customer relations in France – long term relations*

Results from interviews indicate that the longevity of relations of supplying softwood in France can be divided into two categories: wood industry customers which are long term and stable, and relations with DIY and timber merchants which are not. Buying spot volumes is unusual in the studied cases. The main customers for the studied suppliers are wood industry customers. This is thought to be because of profitability, longevity in relations and ease of doing business.

*"In my customer portfolio, which is made up of 90 % wood industry customers and 10 % timber merchant, I don't think I have one that buys on spot"* – Supplier B

*"… for wood industry customers, they just need one dimension. For [timber] merchant maybe 10-11 dimensions and lengths, one of this, one of that per truck…"* – Supplier A

*"…direct customer contact means that we know the customers. By using intermediaries you will lose customers."* – Supplier C

The studied suppliers' relations with French wood industry customers are generally long-term, with relatively stable ordered volumes. This is most evident in the study for the glulam manufacturers. One of the respondents have had a supplying relation with its glulam manufacturer for 35 years, supplying around 60-80 % of its volumes ever since. This producer buys mainly on the quality that is anticipated to be present in the northern part of the Nordic countries (in this case mainly Sweden). The quality of the softwood is important for the quality later for the glulam; hence the wood industry customers will have to accept the premium needed for the high quality.

*"There is a sentimental part about suppliers. [Supplier A] we know them. Will only change if significant price differences."* – Customer A

*"I went up to Sweden some 35 years ago and the sawmill was the best and the quality of softwood was the best."* – Customer B

*"Long-term relation are very typical for French customers, we are really working on long-term. Actually I don't have any customer in my customer portfolio that is buying on spot. The deliveries of volumes are very stable."* – Supplier B

*"We are French, and as Latin's we also think about the feeling that we get from the company. There is always a sentimental part. For example we know the people at [Supplier A] and I mean; we need some significant difference in price to establish a new relation."* – Customer A

*"It's about long term relations. It's not about being starry-eyed, but being there through thick and thin. It's easier to do business with a douchebag than someone you like."* – Supplier C.

*"The tradition in [our company] is to hold the suppliers. Try to take one truck every month. Keep relationship."* – Customer C

*"…mostly stable orders, every month."* – Customer A

*"…a Deutschland supplier for 10-15 years, direct from sawmill. The main French supplier 6-7 years, direct from sawmill."* – Customer C

*"[Supplier A] is an old supplier. We get maybe 2000 [cubic meters] every year and we don't negotiate about prices… It's a trust relationship."* – Customer A

Generally relations between DIY chains and timber merchants are more short-term. The DIY sets up "wanted lists" i.e. states volumes of different dimensions and lengths that the suppliers gives a price for. These are for 2-3 years and usually the supplier who offers the lowest price will be the one supplying the DIY. Since the DIY industries' customers have differing needs regarding both dimensions and lengths, supplying to the DIY will mean low degree of standardization and transporting many different products.

*"Supplying to the DIY today is the ruining of the sawmilling industry"* – Supplier C

This quote is referring to the perception that the people in the DIY is not well educated about sawnwood and that the DIY industry is well consolidated and buying only on price.

*"...we have no DIY at all because of resources. You need people dedicated to that, although the DIY in France is very big, like Castorama. We have a mill in Holland which is focused on DIY articles for Benelux countries but not for France. It [the mill] would be suiting although we haven't made business yet in France."* – Supplier B

*"DIY works in a totally different way. "Appelant du offer" means that you invite 3-4 suppliers that may bid on a setting of goods that you put a price on. Choosing on price."* – Supplier C

*"...DIY is much about price but the hardest is to get the lengths. 2.4, 2.5 and 4.8 (but little). There are problems getting these lengths because of tradition of other lengths."* – Supplier B

*"...most of DIY softwood is French"* – Trader

These findings are in contradictory with Exportrådets (2006), which analyzed the DIY as an attractive customer for a Swedish supplier of softwood. The studied suppliers seem to have focused on customers with higher potential profitability rather than ease of delivering large volumes.

### *4.6.3 Keeping what is agreed upon*

For wood industry customers there are several dimensions that are important, like appropriate humidity, dimensional accuracy, the right lengths, and the right quality class etcetera. Claims are carried out when something is differing from what is agreed upon, more or less.

*"I cross my fingers we don't have so much claims, the production is very well done. With the camera we know everything about the package and what is inside. Huge amount of data of each piece. The only claim we can have is if the goods are stored too long outside, the humidity/rain will make the KD 12 % not 12 % anymore."* – Supplier B

*"You will get claims when you do not supply what you have agreed to supply. Quality grades by sorting will give right quality. If you never get claims you sort to hard and vice versa. You should deliver what you stated in the contract! Just to read the quality grading rules. We are selling a living material; there is negotiation space in the rules."* – Supplier C

The moisture content can vary and there have been complaints regarding moisture content, despite controls with moisture content instruments. If the humidity is too high the glue won't stick the pieces of wood together. The customers will make a complaint if the humidity of the supplied softwood differs too much and the softwood will not be used in the production of glulam.

*"...you know, we don't want to pay twice for the dried wood"* – Customer A

*"The French buyer of softwood thinks like this. The product [from Nordic countries] is really fine, the raw material is fitting very well, the Swede and the Finn is not always following the agreed upon terms; for example if I want goods without vane I will get vane, when I don't want shakes I will get shakes, when I want delivery week 18 I will get delivery week 21, and by then my customer has been forced to take something else instead."* – Trader

*"Sometimes there are problems with more than 12 % moisture content, up to 16-18 %, and blue stain. We test sometimes but put confidence in the sawmill."* – Supplier A

*"We try to talk with the supplier about complaints and try to find a solution"* – Customer C

## 4.7 Perceived quality

### *4.7.1 Importance of raw material origin (for glulam production)*

The importance of origin of the raw material is a quite difficult question. The basic requirement is that the glulam manufacturers want small annual ring width, not too big size of knots, absence of vane and pocket resin. One big glulam manufacturer says the origin is not important, *"as long as the wood meets the requirements for our production"*. This is a pragmatic view, but one can argue that in practice to get the needed dimensions, the raw material has to come from the northern parts of Europe due to its biological given growth preconditions. The actual glulam manufacturer has also been supplied by a Swedish supplier for several years and has a stable relation.

*"The Swedish and Finnish wood is basically the same quality. The important is slow growth and straight wood. Can be used good for visual applications like cladding and window shutters. It cannot bend and twist."* – Supplier A

*"It's the same types of sawmills everywhere, same way of trimming the logs with cameras and wood eye. Quality of logs is different. Whitewood from Nordic countries suit very well for glulam industry, not only about stress grading class. There is absence of pocket resin in Finland comparing to Sweden."* – Supplier B

*"Much sourcing of C30 from Sweden, we need KD 12 % and the French sawmills are not used to this. Need this humidity because else the glue won't work because else the pieces won't stick together."* – Customer A

## 4.8 Business strategy for French wood industry customers

*"The business started 1997 to get closer to the customer."* – Supplier B

Proximity to customers and the ability to deliver fast has been two important strategic aspects for the two studied suppliers. One of the suppliers knew that the wood industry customers are mainly located in the south of France and chose a harbor in the proximity to the customers. The ability to deliver fast is carried out by having buffer inventories.

Depending on what type of customer served, the distribution strategies differ. The two interviewed active suppliers are located by sea and have most transports of softwood to France by boat. Transport cost by truck from Sweden to France is relatively high due to long distance to the northern sawmills and absence of detour transports. An example given is twice the truck transportation cost in France per $m^3$ comparing to typical destinations in Germany and Holland. Despite the high truck transportation cost, there is an example of a supplier which is transporting by truck from Sweden to its most important customer – the glulam manufacturers. This may be due to the resources needed to establish a working logistic based upon boat transports to harbor.

## 4.9 Success factors on the French market

Being able to supply in short time, according to specification and having the right product is in short what is important.

*"I am the bigger player here. I have stocks at two sites meaning very high level of service. I can guarantee 24 h delivery throughout whole France. That's why I am talking about long term. We make sure that we have the right stock, at the right place, at the right time. That's why I think we've been successful. Also a good team, salespersons, you need the right team. And of course you need a good product"* – Supplier B

Supplying big volumes to French wood industry customers is not only about having the volumes of the right product but also to have the right resources and personnel.

*"I like [Supplier A:s] products and they're not able to supply the volumes, and not only because of lack of volumes but of resources like personnel. Like with [another Swedish supplier], only one guy who is serving mostly glulam industry by truck. I like them very much but he's alone. That's why he's not so big in France.* – Supplier B

Knowing your customer as well as knowledge of the country is important.

*"No special considerations. You have to be smart as when selling to all markets, you have to know how it works. The more you know of the country, the better. You have to know what is missing at your sawmill, know what can be used instead of this and that. Know what the wood is used for."* – Supplier C

## 4.10 Special findings from the interviews

### *4.10.1 Redwood in France*

Although the French market for softwood is mainly whitewood, there are particular areas where there is a market for redwood. For example in areas in the French West Indies (territories under French sovereignty) like Martinique they are using impregnated redwood for almost everything because of the high humidity.

*"Glulam industry are using impregnated redwood for Caribbean islands… for whatever they are producing, houses etcetera. They are looking for planed, impregnated redwood. High value, but very small market."* – Supplier B

### *4.10.2 Utilization of domestic forest recourses*

France has expressed will to increase the utilization of the own forest resources (c.f. UNECE 2010b) this could potentially be a negatively affecting factor for the softwood exporting countries. The will of utilizing own raw material is also stated in interviews, like oak. Today France is only cutting half of the annual growth.

*"Maritime pine primary for pulp. They are very twisted because of the influence of the sea. Trees are small with a small diameter. Cut in 2 meter length can be efficient and used to produce bastaings in one length for French DIY"* – Supplier A

### *4.10.3 Market in Brittany – a market for southern Swedish sawmilling industries*

A market for Swedish sawmilling industries and for sawmilling industries situated in the southern part of Sweden is in area of Bretagne.

*"..why? Because they are building in wood, have almost no forest and it is a long distance to Germany"* – Supplier A

Bretagne lies located in the north western part of France and they build some of their buildings in undried wood.

*"In Brittany I have customers that buy undried goods. Then I have broken my own philosophy of not supplying trucks that are half loaded… The transportation will be expensive…"* – Trader

Supplying undried wood will mean transporting water that will take up loading capacity on the transport. This ultimately means that you cannot load as much volume as when supplying softwood with say 18 % moisture content.

# 5 Conclusions and discussion

This study's main findings, in terms of the research purpose, are:

1. *The French market for softwood regarding product flows, trends and market actors can be described as:*

- The French market for softwood is Europe's second biggest market with Russia excluded
- Big suppliers of Nordic raw material are SCA Timber, Stora-Enso Timber, UPM Timber, Metsä Wood and Setra
- The market is over 90 % spruce
- Business between suppliers of softwood with wood industry customers are based on long term relations
- There is a growing interest in building with wood that is anticipated to keep growing

2. *Product and service quality dimensions that potential customers and key market actors considered to be important were:*

- Glulam manufacturers have the highest quality demands of the studied wood industry customers and have longest relations with suppliers
- Glulam manufacturers have a tradition of sourcing softwood from Nordic countries due to slow growth and strength grading
- Roof truss manufacturers mainly buy on the basis of price
- Timber frame house manufacturers have quality demands for planed and strength graded whitewood that match the capabilities of sawmilling suppliers from southern Sweden

3. *Advice to fulfill French wood industry customers' demands, regarding e.g. logistics, service levels and product quality levels is:*

- To be able to certify according to PEFC, which is an entry ticket to the French market
- To take into consideration that the key to success in business between suppliers and wood industry customers is to be able to supply the right product, according to specification, as well as to supply quickly. That is, a bundle of product and logistic service offerings are needed
- To get to know the culture as a means to facilitate business

## 5.1 General discussion of findings and conclusions

The French market is a big softwood market due to a growing interest in building with wood. This interest may have arisen from the wood promotion campaigns, including political drives to increase the use of wood when building.

The big 'Nordic' suppliers of softwood to the French market have been successful since they have the right raw material base as well as have developed suitable logistics solutions that fit their customers' needs.

The current Nordic wood business in French today is based on long term business relationships. This may have arisen because the product quality of these supplier's softwood is

high comparing to other suppliers. The Nordic suppliers are also known to be able to take into account customers' demands – perhaps to a larger extent than say Canadian suppliers of softwood. Such assuming the price of current suppliers' offerings remains competitive, such long term relations may mean that the supplier has in effect 'locked in' their customers.

Supplying to the roof truss manufacturers will mean a high competition from mainly German sawmills and given the high transportation costs, building a strategy on supplying low product quality softwood to French roof truss manufacturers does not seem fruitful at the moment.

Doing business with wood industry customers in France is not only based on the fact that the supplier is providing the appropriate softwood. The intangible aspects like personal relations as well as knowing the culture will decide whether or not you will succeed in your business relations. The dimensions of the offering that is not covered in the core product have a significant role in fulfilling the customers' perception of value.

The study has shown that fast and timely deliveries are a key component and that 'soft values' like being familiar with the supplier is important. The studied suppliers of Nordic softwood has matched their customers' needs by establishing buffer inventories with possibility to deliver within one day, have the raw material sourcing base fitting mainly the glulam industry and have the resources and personnel knowing the language and culture needed to please their focus wood industry customers in France.

### *5.1.1 Long term relations*

The results show that relations with most French wood industry customers are long-term. An interesting study would be to compare relationship longevity on different markets by e.g. interviewing suppliers of softwood to different markets as well as customer visits in the respective market. The case of long term is interesting, since customer longevity is proposed in the service quality literature as a source of profitability, although there is more recent literature doubting this general finding (c.f. Storbacka et al. 1994).

Furthermore results indicate that glulam manufacturers is the most long-term and the studied wood industry customer with highest "quality needs", meaning strength graded spruce that is slow grown more or less without defects. The roof truss manufacturers or *charpente industrielle*, is the customer in the study that has lowest quality needs, meaning in practice mainly fast-grown spruce from west parts of Germany. These are buying mostly on price and can sometimes buy undried softwood and let it dry outside. Timber frame house manufacturers is placed somewhere in between the two, meaning that they ask for strength graded softwood that is planed.

The glulam manufacturers have had longest relations with Swedish suppliers, probably because of the need of the right raw material – roof truss manufacturers and to some content timber frame house manufacturers can buy more or less whatever raw material that is meeting the standards, meaning that the potential suppliers are more to the numbers.

The glulam manufacturers in France seem to be a long-term, stable and profitable customer for the sawmilling industry in northern Sweden which can provide high quality of softwood. Even though price is always important determinants for sourcing, the quality of wood is considered more important in glulam manufacturing and hence the customer will pay the 'quality premium', although the customer will probably mention that the price is high. Since

the domestic raw material grows much faster, this competitive position is considered to be maintained, despite nationalistic incentives to increase the use of French wood.

### *5.1.2 Certification of softwood*

The PEFC certification, which is the most important certification on the French market for softwood is regarded to be a transaction cost that is needed in order to sell the softwood. This can be because of the fact that the interviewed suppliers have been active on the market since the certification was not needed in order to sell, and that the forest management and supply base has remained the same during the time. The lack of premium for PEFC certified softwood can also be a cause of skeptical views.

Since sustainability and environmental awareness is considered to be increasing and put in even more focus, the question of certification will surely not lessen in importance. On markets where environmental awareness is high, i.e. not only buying on price, the certification can be seen as a hygiene factor, meaning that you need to have it in order to supply.

### *5.1.3 Supplying right softwood to glulam manufacturers*

The outcome of C30 of slow-growing spruce in a sawmill in the southern part of Sweden is anticipated to be too small in order to establish long-term relations with French glulam manufacturers. Although the southern sawmills in Sweden sometimes are importing timber from the cheaper middle part of Sweden, supplying the right raw material in the long run is considered to be of big importance, and relying on raw material from far away is not appropriate. The outcome of C30 in a typical VIDA sawmill when using saw-falling quality and mechanical strength grading is around 60 % (Svensson, pers. comm. 2014).

Not surprisingly perhaps, the sawmilling industries in the northern part of Sweden seem to have a more favourable raw material situation, meaning a C30 outcome of more than 70 % for some of the sawmills supplying the French glulam industry. The competitive advantage of the northern sawmills – being able to take a price premium for C30 grading – seem to have been decreased since the market premium between C24 and C30 is around 10 € only. There is a perception that this premium should be higher to reflect the high quality.

It is important to supply according to what is agreed upon. Delivering according to specifications is also identified earlier as a quality dimension in the literature (c.f. Garvin 1984). Keeping what is promised is also marked highest of 36 measurable questions in Brännström (2010). The interviewed suppliers are stating that they are good at doing this, although there can be discrepancy with what customers are experiencing. For example one of the customers recently tested C30 and found it breaking at a significantly lower pressure than the standard says.

### *5.1.4 Southern Swedish spruce to French glulam manufacturers*

There has been a tradition of sourcing whitewood from the northern part of Sweden for French glulam manufacturers. This is considered to be mainly because of slow growth and availability of softwood with high strength grading classes, as well as a basic thought of ‘high quality’ from the northern parts.

Today when strength grading is done with high accuracy mechanically, it may seem logic to be able to source the raw material from wherever, as long as the appropriate strength grading class is present. Whitewood from the southern part of Sweden is harder, stronger and has a higher abrasion resistance than whitewood from the northern parts (Svenskt Trä 2014b). There

can be logic in the fact of sourcing whitewood from the northern parts where knots can be smaller and hence more prominent for glulam intended for visual applications.

Some German glulam manufacturers are sourcing whitewood from the southern parts of Sweden today, and given their reputation of high accuracy the French glulam manufacturers ought to be able to use it as well. In order to build up the trust needed for broadening the sourcing area for glulam manufacturers in France, the supplying firm need to be prepared to adapt to the French business culture, as well as building up supply chains that can deliver timely, precisely and according to what is agreed upon.

Importance of price of softwood

There has been a consolidation of the wood industry in France, mainly because of the economic crisis. One of the studied customers were previously 10 individual companies which now has been bought by a big company, which buys around 1.2 million cubic meters annually. The owner has centrally located purchasing organizations and price is the most important criteria.

One interviewed supplier has recently looked over its business structure and focus, meaning basically lowering capacity in non-profitable production sites and focusing on profitability, rather than producing large volumes of softwood. This has in turn meant that the customer portfolio has been overlooked, and for example this supplier has no DIY in France and are no longer supplying to the industrial carpentry, i.e. roof truss manufacturers.

Although the price as determinant of sourcing is considered to be varying among the wood industry customers, price is always important and even for glulam manufacturers in France, which are considered to have the highest quality demands. For the studied glulam manufacturers, raw material has the largest share of costs, which in general would mean that they are price sensitive for the raw material (c.f. Rennel 2010).

Delivering undried softwood to France

Our own experiences in Sweden of building houses are that it is best done with dried wood, for example because of the wood's tendency to reshape when dried. In France building is still present with undried wood to varying extent. Some of the wood will dry outside in the sun to the appropriate moisture content, but this is an area which may not be that well looked into. Half-jokingly, half seriously it is said that the more south you will come in the northern hemisphere, the less control you will be subject to.

Even though most of the Swedish sawmilling industry in general want to deliver dried wood, there are times when capacity in driers is lower than other parts of the sawmill, i.e. being a bottleneck. If utilization of the sawmill is considered best to be held up, one temporary solution can be to deliver undried wood. Typically the cost of drying for say 3 days will be matched by the price reduction of around 10 € for undried comparing to dried softwood.

*"France won't have problems with undried… It's forbidden in Sweden and probably not legal according to building norms in France either."* – Supplier C

*"Quite a lot are sold undried from the southern part of Sweden. What I bought was undried."* – Supplier C

## 5.2 Results' compliance with marketing and quality theory

Historically quality has been considered as something that can be measured in the sawmilling industry (c.f. FSS et al. 1994). The sawmilling industries with sourcing of raw material from areas with slow growths – i.e. northern part of Sweden, are using this perception in order to facilitate sales. The softwoods product quality from the southern part of Sweden has an advantage in mainly structural timber, where abrasion resistance and stiffness of the softwood is important.

The French customers seem to know of the high quality softwood from Sweden. The manufacturers that need 'high quality' softwood (mainly visual appearance, size of knots and small annual ring width) use this as criteria for choice of supplier. Hansen et al. (1996) rated that 'lumber characteristics' was most important quality dimension for customers.

Although product quality is important, the French customers do value fast deliveries of softwood and that suppliers are keeping what is agreed upon. These dimensions are not included in the previous understanding of quality as in product quality. Also suppliers of softwood in France is emphasizing the need of timely deliveries and to be regarding to the customers need – being there through thick and thin. These dimensions can be found in the service quality components; reliability and responsiveness (Parasuraman et al. 1988).

The offering is consisting of five different elements (Ford et al. 2006) where service and delivery are two of them, which are both important elements according to the study. In the fifth element of the offering, costs and price, it is stated that the price of the product will be one part of the customers' total cost for the offering. Working up a relation and to find a new supplier that can provide with the right type of softwood will cost time and money, which is stressed mainly by one interviewed wood industry customer.

Hansen et al. (1996) are also stressing the need for a sawmilling industry to consider service aspects in order to reach a high overall evaluation of product quality.

During the study it is evident that the studied wood industry customers that have a built up relation with a supplier of Nordic softwood is generally happy, i.e. have a positive perceived value. Although there has been some shortcomings regarding the core products' quality, the added values in form of e.g. appropriate claims handling and consistently fast deliveries seem to make the relation long-lasting and strong. The added value of being a reliable supplier as well as having buffer inventories strategically placed meaning fast deliveries to customers are recurring important criteria for a strong relationship between suppliers and French wood industry customers.

Since wood is a living material with sourcing from thousands of forest owners and forests, and because the production equipment in the sawmill is not always working as intended, it is almost inevitable that there will be shortcomings in product quality when supplying several thousand cubic meters. The most rational way to deal with this issue is to bring positive perceived value for the customer by having a standard for handling the added values, i.e. get things that are not as it should be fixed fast by elaborated claims handling and great service.

In short the sawmilling industry need to be able to supply a product that is meeting the demanded wood quality dimensions for a customer and apply to a high level of service and deliver it in time according to what is agreed upon: a good offering.

## 5.3 Results' compliance with the initial purpose of the study

Covering the general softwood market aspects was done mostly prior to the main data collection. The interviews of mainly suppliers have strengthened the description of the market and provided a more accurate and thorough understanding, as well as projections for the future regarding macro-economic and building indicators.

Describing the demanded product and service quality dimension is based almost exclusively on the interviews. Given the practical implications leading to un-proportional time spent discussing the three types of wood industry customers, the most versatile description of quality dimensions are considered to be actual for supplying softwood to glulam manufacturers.

The advice or keys to success are outlined in general terms, meaning probably no surprise for a sawmilling industry. Even though they may come as no surprise, these areas are considered of great importance for wood industry customers' satisfaction.

The main conclusions with connections to the purpose of the study are outlined in the next section.

## 5.4 Future of building in wood in France

The campaigns run in France in order to increase the use of wood seem to have had effect. According to interviews, building with wood in total has increased from around 4-6 % in 2007 before the campaigns and is now over 10 % indicating that the efforts are paying off.

*"I am a pronounced optimistic! France has governmental steering for increased use of wood... They are awake for the environmental thinking, it should be more wood! ...and we have quality on what we deliver."* – Market analyst

Looking on figures from Euroconstruct, the projection is that the negative trend of new housing will be kept 2014, will end and turn positive in 2015 and keep being positive in 2016.

## 5.5 Reflections on the research methods

For the final conclusions and implications for a sawmilling industry in southern Sweden, empirical evidence has been gathered not only by doing the formal face-to-face interviews. All the visited customers showed their production where further discussion and elucidation was with taken.

Interviewing an intermediary, i.e. a trader, has given the possibility to get another view from an additional actor, not directly linked to suppliers or wood industry customers.

The interview with the market analyst was not following the interview guide first intended (Appendix 3). This was due to the analyst's expertise in macro factors on different softwood markets and projections rather than detailed quality needs for different wood industry customers. Focus was shifted more to what can happen in the future regarding e.g. what effect wood promoting policies will have.

Of practical reasons, glulam manufacturers have been given most focus. This is because of Swedish suppliers' history of supplying to these customers and that the interviewed customers' with production of more than one product had their main business in glulam. This

un-proportional time spent with customers can have reduced reliability of e.g. what type of softwood is most suitable for the house manufacturers. To reduce this bias, "site visits" were conducted i.e. looking into the production of timber frame houses, where pictures were taken and questions were asked.

The language is a source of bias. Without doubt, being fluently in French would have made the study easier. Not every French wood industry has an English speaking person, and the one that is good in English is rather high up meaning basically lack of time. With two of the interviewed customers, an interpreter was used meaning another filter. The advantage of meeting with wood industry customers, and being able to see the production is that it is possible to see what is accepted and what is not in practice.

### *5.5.1 Searching for interviews – or barriers on the French market*

The study's first approach was to use a purposive sampling, meaning practical advantages as in short distance to travel for me as well as – further on – proximity to the producing country when supplying softwood. Having experience of similar approaches in Sweden with interviews of people in the business, the approach now seems naïve in hindsight.

When contacting a firm in France, usually French speaking will answer on the general telephone number listed, meaning that without the French language you will have problems reaching the people you are seeking. Emails sent to companies were left unanswered, also when translated into French and with regards from a professor. Present relations with wood industry customers had facilitated booking of interviews.

It was made clear that the need of a clearly defined criterion to include or exclude a case in purposive sampling (c.f. Bryman 2008), lead to the fact that I was not receiving interview objects enough at the first approach. Given these practical implications, the sampling cannot be regarded as a purposive sampling. In order to arrange interviews in the study, contact was made with key actors that were considered to know the French market which lead to another actor, which eventually could mean an interview. This is best described as a snowball sampling methodology.

Prior to the trip to France for interviews I had gained knowledge about key actors that could possibly arrange interviews with fitting respondents. Atkinson & Flink (2001) states that in order to use the snowball method, the first stage respondents need to have a social network as well as the knowledge about further respondents. In this study mainly Internet was used to identify people in the forest industry that has been doing business in France and/or have projects in France.

Through the contact seeking, over 30 contacts have been made. Even though most of them do not qualify as real interviews, every contact has dealt with the French market for softwood and can be regarded to strengthen the final analysis.

In short

- Language
- Hierarchy
- Present relations
- Protectionism

These barriers to reaching wood industry customers are similar to barriers identified on the Spanish market (Metsävainio 1992).

### *5.5.2 Interviews and pilot studies*

The customer in the La Rochelle-region is designing the timber frame houses and makes calculations on raw material needed for the appropriate abrasion resistance and cost estimations (Customer D). This customer can be regarded as a softwood actor, maybe more than a softwood customer. They do choose what type of wood and appearance the houses should have, although an external company is putting the house together and does the actual softwood purchasing. In practice interviewing was also conducted with the firm that did the actual building of their houses, hence the questions of important quality measures was covered. A site visit of a house under construction was also made, where the dissertations' quality dimensions was discussed. Since the wood is the company's face outwards and its profile, the raw material used will have significant impact on the products delivered and can be considered important. The type of frames used is the same as the ones in the pilot study.

After the summary of interviews, follow-up questions were conducted with the actors where I was unsure of if I have got certain details right. Whole manuscripts have not sent been out because of the time it would have meant and to avoid the possibility to change the result depending on if the actors agreed with my conclusions or not, unless respondents was asking for this explicitly. The questions asked were of the type "did the DIY chains call it appellant".

The interview time was told to be around 50 minutes, while in practice they could last for up to around 1 hour 10 minutes. The actual visits at each company were however longer, due to production site visits where further follow-up questions were asked. This was done in order to see the use of softwood in practice, as well as getting a more practical understanding of each wood industry customers' different production and views.

Pilot studies

The pilot interviews in Sweden were done with three main purposes. One purpose was to improve the interview skill (c.f. Trost 2005) and the second to benchmark the interview guide questions and the questionnaire. The third main purpose was to learn more about the three wood industry customers and other actors important for the study. At the host company there is a house manufacturer and a roof truss manufacturer. To improve the study, a pilot study at a glulam manufacturer in Sweden had been appropriate. Mainly due to practical reasons – other companies and different geography – this was not done. To learn about glulam manufacturing and important quality dimensions for glulam, literature about the subject was studied.

In short the pilot studies were vital in order to conduct meaningful interviews as well as better interviews.

The meaningfulness of every pilot interview can be discussed. To answer the purpose it may have been enough with pilot studies of the wood industry customers. It is considered appropriate though to gain knowledge of the struggles of raw material procurement, as well as for example freight costs from sales persons in order to give a meaningful advice to a sawmilling industry.

Reflection about interviewing other actors than customers

There is often a perception that a firm should focus on what the customer wants. In order to achieve strategic fit a firm must first understand its customers' needs for different segments (c.f. Chopra & Meindl 2013).

When interviewing the other softwood actors, questions were asked on what they anticipated that the French wood industry values, in order to bring reliability to the final analysis. Customer perceptions are valuable to the firm since a satisfied customer can bring profitability to the firm. Although it can be argued that aspects on customer relations like how price sensitive the customers are, and how long term the relations are can better be captured by interviewing the suppliers and distributors. They have also knowledge on history of customers, i.e. if the customers' valued dimensions have changed over time.

In short I think that in order to cover the question of how a certain market works and what you as a sawmilling industry can expect regarding e.g. distribution, customer relations, upcoming trends and important policies and important end-users, you need to use multiple sources – both quantitative and qualitative as well as several actors.

Reflections about snowball sampling methodology

In the literature of snowball sampling methodology, the bias of gatekeepers is discussed (c.f. Atkinson & Flint 2001), meaning actors that are reticent or protective to the ones they care for, and thus hindering access for the researcher. Due to business secrets it can be logic to argue that suppliers of softwood to French wood industry customers would not be sharing information, and working as gatekeepers in the effort to gain knowledge of customers. Given my own experience of interviewing two big suppliers, I doubt that this is true in the study. For example one of the suppliers made sure that everything was alright regarding my interview with one of their customers later on, and also providing information about their relation.

Especially the English speaking French wood industry customers can be categorized as hard to reach, given the efforts made to commence data collection. The biggest advantage with the snowball sampling methodology is stated to be that the researcher can get respondents which are few to the numbers and a degree of trust is required. The trust in this study can be regarded to stem from people contacted from Sweden, which have present connections and relations with the actors on the French softwood market. Furthermore, the snowball sampling methodology is stated to be the most effective way to method to reach the hidden or hard-to-reach populations (Valdez & Kaplan 1999).

The snowball sampling method is described by Cohen and Arieli (2011) as a 'second best' choice method – because of the un-random sampling more or less. The limitation of the method lies in uncertainty of internal and external validity. The same authors conclude however, that using the method can mean the difference between being able or not to conduct a study of hard-to-reach populations.

## 5.6 Future research

Further research can be to study whether France could be a Redwood market and barriers for this. A supplier wished to introduce redwood but have not succeeded to the extent that was wanted. In the study I have presented the different main end-users of softwood, but their percentage of the market is yet unknown and would be an interesting study. To rate the different quality dimensions importance, a study where a importance performance analysis is conducted could bring light on what dimensions that is most important and which dimensions

that is less important for French wood industry customers. Since wood promotion seems to have had significant effect on the French market, the future effectiveness and how to improve the promotion and to identify keys to success, could also provide basis for further research.

## 5.7 Recommendations for a sawmilling industry entering the French market

In order to establish direct business interactions with French wood industry customers the supplying sawmilling industry need to be aware of potential cultural barriers regarding especially language and the highly hierarchical organizations. Furthermore a supplier of softwood need to consider the fact of high competition on the market of softwood from mainly German sawmills. Some of the outlined end-users of softwood are using its market power, i.e. high consolidation and large bought volumes leading to a strategy of buying mainly on price. The relations with wood industry customers are long-term and in order to establish a new relation the confidence of the customer has to be gained, by supplying the right softwood in short time and in accordance with what one has agreed upon, as a suggestion.

Most of the supplied volume of softwood from the southern part of Sweden has entered the market by intermediaries or by other suppliers that are already present with distribution in France. To build up direct business interactions with the wood industry customers the supplying sawmilling industry is considered to be in need of French speaking personnel as well as timely and well adapted and positioned distribution solutions.

At the moment, the market opportunities of softwood in France for a sawmilling industry in the southern part of Sweden means that there are no low hanging fruits, although this will change given the rise of softwood consumption.

# References


Aaker, D.A, Kumar, V, & Day, S.G. (2001). *Marketing Research*. 7th edition. John Wiley & Sons: Kingsport.

Andersson, T. (2011). *Valutakursen äter upp prishöjning på trä*. [Online] Available: http://www.atl.nu/skog/valutakursen-ater-upp-prishojning-pa-tra [Used 2014-02-03].

Anderson J., & Narus J. (1998) Business Marketing: Understand what customers' value. *Harvard Business Review* Reprint 98601

Anon. (2013a). *Skogsindustriernas branschfakta 2012*. [Online] Available: http://www.skogsindustrierna.org/MediaBinaryLoader.axd?MediaArchive_FileID=cc53e15d-981d-485a-a14b-3b016c3f14fb&FileName=Faktasamlingen_2012_slutversion_svensk.pdf, [Used 2013-01-24].

Anon. (2013b). *8th INTERNATIONAL SOFTWOOD CONFERENCE. EOS & ETTF Market Survey 2011*. [Online] Available: http://www.isc2013.co.uk/wp-content/uploads/2013/11/ETTF-EOS_Market-survey-report-2013-ISC-Edinburgh.pdf [Used 2014-02-27].

Anon. (2013c). *Enquête nationale de la construction bois - Activité 2012*. [Online] Available: http://aprovalbois.com/sites/default/files/FBF%20Observatoire%20Construction%20Bois%202013.pdf [Used 2014-05-08].

Atkinson, R. & Flint, J. (2001). Accessing hidden and hard-to-reach populations: Snowball research strategies. *Social Research Update* No. 33.

Björheden, R. & Helstad, K. (2005). Raw Material Procurement in Sawmills' Business Level Strategy-A Contingency Perspective. *International Journal of Forest Economics* 47–56.

Brännström, M. (2011). En konkurrensanalys av SCA Timbers positionpå den norska bygghandelsmarknaden. A competitive analyze of SCA Timbers position in the Norwegian builders merchant market. Institutionen för skogens produkter, SLU, Uppsala

Cannon, J.P., & W.D. Perreault. (1999). Buyer-Seller Relationships in Business Markets. *Journal of Marketing Research*. 36: 439-460.

Cohen, N. & Arieli, T. (2011). Field research in conflict environments: Methodological challenges and snowball sampling. *Journal of Peace Research* 2011 48: 423.

Chopra, S., Meindl, P. (2013) *Supply Chain Management – Strategy, Planning and Operation*. 5th Edition. Essex:Pearson Education Limited.

Cronin, J. J. & Taylor, S. A. (1992). Measuring Quality : A Reexamination and Extension. *Journal of Marketing,* 56(3), 55–68.

Eiriz, V., & D. Wilson. (2006). Research in relationship marketing: Antecedents, traditions and integration. *European Journal of Marketing*. 40(3/4): 275-291.

FAO (2003a) Forest Outlook Study for Africa regional report - opportunities and challenges towards 2020.

FAO (2003b). Forestry Outlook Study For Africa - Subregional report North Africa.

FAO (2014a). 2012 Global Forest Products Facts and Figures. [Online] Available: http://www.fao.org/forestry/download/35445-06bb3283bef3163fab71492f6e3cfd8c5.pdf [Used 2014-03-01].

FAO (2014b). *FAOSTAT*. [Online] Available: http://faostat.fao.org/site/626/default.aspx#ancor [Used: 2014-02-16].

Fiskarheden (2014). *Fiskarheden - Företaget*. [Online] Available: http://www.fiskarheden.se/default.asp?PageID=513 [Used 2014-05-09].

Ford, D., Gadde, L.E., Håkansson, H. & Snehota, I. (2006) *The Business Marketing Course.* Second edition. West Sussex: John Wiley & Sibs.

French Timber (2014). French Softwood Species. Species, uses, grading system. [Stencil]. [Used: 2014-03-07].

Freij, J. (2012). *Skog och Ekonomi*. [Online] Available: http://viewer.zmags.com/services/DownloadPDF?publicationID=399d33e7&selectedPages=all&pubVersion=7 [Used 2014-02-03].

Föreningen Svenska Sågverksmän (FSS), Finlands Sågindustrimannaförening & Treindustriens Tekniske Forening (1994). *Nordiskt Trä. Sorteringsregler för sågat virke av furu och gran*. Markaryds Grafiska:Markaryd.

Goodman, L.A. (1961). Snowball sampling. *Annals of Mathematical Statistics* 32 (1): 148–170.

Garvin, D. (1984). "What Does "Product Quality" Really Mean?" *Sloan Management Review* 25-43.

Grönroos, C. (2000). Relationship marketing: The Nordic perspective. *In*: Handbook of Relationship Marketing. J.N. Sheth and A. Parvatiyar, Eds. Sage Publications. 680 p.

Grönroos, C. (2004). The relationship marketing process: communication, interaction, dialogue, value. *Journal of Business & Industrial Marketing* 19(2): 99–113.

Grönroos, C. (2008). Service logic revisited: who creates value? And who co-creates? *European Business Review* 20(4): 298–314.

Grönroos, C. (2011). A service perspective on business relationships: The value creation, interaction and marketing interface. *Industrial Marketing Management* 40(2): 240–247. doi:10.1016/j.indmarman.2010.06.036

Gällö Timber (2014). *Om oss*. [Online] Available: http://www.gallotimber.se/om-oss/ [Used 2014-02-03].

Gummesson, E. (1996). Relationship marketing and imaginary organizations: a synthesis. *European Journal of Marketing* 30(2): 31–44. doi:10.1108/03090569610106635

Hansen, E.N., Bush, R.J. & Fern, E.F. (1996). An empirical assessment of the dimensions of softwood lumber quality. *Forest science*. 42(4): 407-414

Hietala, J., H. Hänninen, R. & Toppinen, A. (2013). European Monetary Union Regime. *Forest Science* 59(4): 379–389.

Hoflund, P. (2013). Sågklassläggning vid Krylbo såg – En studie med syfte att öka sågutbytet. *Saw class distribution at Krylbo sawmill - a study with the aim to increase the yield*. Institutionen för skogens produkter, SLU, Uppsala

Hugosson, M. & McCluskey, D.R. (2008). Strategic transformations of the Swedish sawmill sector 1990-2005. *Studia Forestalia Suecia* 217.

Hugosson, M & McCluskey, D.R. (2009). The marketing competences of the Swedish sawmill sector. *Journal of Forest Products Business Research* No. 6

Hunt, S.D., Arnett, D.B. & Madhavaram S. (2006). The explanatory foundations of relationship marketing theory. *Journal of Business & Industrial Marketing* 21 (2): 72 – 87.

Ideesmaison. (2014). *Construction: Dimensions courantes du bois*. [Online] Available: http://www.ideesmaison.com/Le-Mag-de-la-Maison/Fiches-bricos/Bois/Normes-entretien-divers/Normes-dans-le-bois/Dimensions-courantes.html [Used 2014-03-12].

Jonsson, R. (2009). Prospects for timber frame in multi-storey house building in England, France, Germany, Ireland, the Netherlands and Sweden. Research Report no. 52. Växjö University, School of Technology and Design.

Johansson, M., & Rosling, K. (2002). The timber cost of a board. *Scandinavian Forest Economics* 39 (June): 229–239.

Kvale, S. (1997). *Den kvalitativa forskningsintervjun.* Lund:Studentlitteratur.

Landguiden. (2014). *Servicesektorns andel av BNP (procent)*. [Online] Available: http://www.landguiden.se/Statistik/Ekonomi?id=524#countries=SWE,BHR [Used 2014-03-10].

Lindberg, T. (2012). *Sågverken lider – svaga euron plågar*. [Online] Available: http://sverigesradio.se/sida/artikel.aspx?programid=91&artikel=5238721 [Used 2014-01-29].

Lindholm, G. (2006). *Sågverksbranschens kostnads- och intäktsstruktur: undersökning, analys och trender inom svensk sågverksnäring*. Institutionen för skogens produkter, Sveriges Lantbruksuniversitet, Uppsala.

Lähtinen, K. (2007). Linking resource-based view with business economics of woodworking industry: earlier findings and future insights. *Silva Fennica* 41 (December 2006). Retrieved from http://www.metla.fi/silvafennica/full/sf41/sf411149.pdf

Lähtinen, K., Haara, A., Leskinen, P. & Toppinen, A. (2008). Assessing the Relative Importance of Tangible and Intangible Resources : Empirical Results from the Forest Industry. *Forest Science* 54(6): 607–616.

Magnusson, D. (2013). Investeringsbedömning för AB Karl Hedins Sågverk i Krylbo. *Evaluation of an investment at AB Karl Hedin's sawmill in Krylbo*. Institutionen för skogens produkter, SLU, Uppsala

Martilla, J.A. & James, J.C. (1977) Importance-Performance Analysis. *American Marketing Association*, 1977: 77-79

Matzler, K., Bailom, F., Hinterhuber, H.H., Renzl, B. & Pichler, J. (2004) The asymmetric relationship between attribute-level performance and overall customer satisfaction: a reconsideration of the importance-performance analysis. *Industrial Marketing Management* no. 33: 271-277

Morgan, R. & Hunt, S. (1999). Relationship-Based Competitive Advantage: The Role of Relationship Marketing in Marketing Strategy *Journal of Business Research* Vol 46: 281-90.

Metsävainio, A. (1992). Spanien: snickeriindustri, möbelindustri, allmän information samt företagsbesök**.** Project report. Träinformation:Umeå.

Nord, T. (2005). Structure and developments in the solid wood value chain – Dominant saw milling strategies and industrialized housing (Licentiate dissertation). Luleå University of Technology, Sweden. LTU-LIC-2005:57. 254 p.

OECD (2014). *France – Country profile*. [Online] Available: http://www.oecd.org/eco/economicoutlook.htm [Used 2014-05-20].

Parasuraman, A., Zeithaml, V.A. & Berry, L.L. (1985). "A Conceptual Model of Service Quality and Its Implications for Future Research", *Journal of Marketing*, vol. 49 (Fall).

Parasuraman, A. & Zeithaml, V. (1988). SERVQUAL: A Multiple-Item scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing* 1988.

Petterson, T. (2013). Rätt val av timmerråvara – kan lönsamheten förbättras med en djupare kunskap om timrets ursprung? *The right choice of saw logs – is it possible to increase profitability with a deeper knowledge about the saw logs' origin?* Institutionen för skogens produkter, SLU, Uppsala

PwC (2013). *Global Forest, Paper & Packaging Industry Survey 2013 edition – survey of 2012 results* [Online] Available: http://www.pwc.com/en_GX/gx/forest-paper-packaging/assets/pwc-global-forest-paper-packaging-industry-survey-2013-edition-survey-of-2012-results.pdf [Used 2014-02-07].

Pöyry (2013) Virkesmarknadsutsikt och sågverksindustrin i perspektiv [Stencil] [Used 2014-03-15].

Rennel, J. (2010). *Långsiktigt värdeskapande och värdeförstöring - framgångsrika och misslyckade investeringar i skogsindustrin*. Malmö:Liber ekonomi.

Rust, T.R. & Zahorik, J.A. (1993). Customer satisfaction, customer retention, and market share. *Journal of Retailing* 69: 193-215.

Sauquet, A., Lecocq, F., Delacote, P., Caurla, S., Barkaoui, A., & Garcia, S. (2011). Estimating Armington elasticities for sawnwood and application to the French Forest Sector Model. *Resource and Energy Economics* 33(4): 771–781.

Skogsindustrierna (2013). *Major interest in China for Swedish wood used for interiors*. [Online] Available: http://www.forestindustries.se/i_fokus_-_startsidenotiser_1/major-interest-in-china-for-swedish-wood-used-for-interiors, [Used 2014-03-21].

Setra (2011). *Setra i korthet*. [Online] Available: http://www.setragroup.com/upload/Broschyrer%20i%20PDF/Setra-i-korthet-l%C3%A5guppl.pdf, [Used 2014-03-20].

Setra (2013). *SetraNews Oktober*. [Online] Available: http://www.setragroup.com/upload/SetraNews/pdf/2013/SetraNews_SWE_Okt2013.pdf/, [Used 2014-03-20].

SCA (2010). *Nytt säljbolag i Kina*. [Online] Available: http://www.sca.com/sv/timber/Press/Nyheter-SCA-Timber-1/2010/Nytt-saljbolag-i-Kina/, [Used 2014-03-21].

SCA (2013). *SCA Timber China & S.E. Asia*. [Online] Available: http://www.sca.com/sv/timber/Om-oss/SCA-Timber-China--SE-Asia/, [Used 2014-02-03].

SCA (2014). *SCA Timber France, PLF*. [Online] Available: http://www.sca.com/en/timber/About-us/SCA-Timber-France/, [Used 2014-03-12].

SFV (2008). *Trä som byggnadsmaterial – krav och riktlinjer*. [Online] Available: http://www.sfv.se/Documents/Bygg-pa-kunskap/Byggnadsvard/tra_som_byggnadsmaterial_080221-2.pdf, [Used 2014-02-16].

Stendahl, M. (2009). Product Development in the Wood Industry – Breaking Greshams law. Acta Universitatis Agriculturae Sueciae No. 2009:3, SLU, Uppsala.

Svenskt Trä. (2012). *Frankrike*. [Online] Available: http://www.svenskttra.se/internationellt_6/frankrike_1_1 [Used 2014-02-10].

Svenskt Trä. (2014a). *Standarder och standardiseringsarbete*. [Online] Available: http://www.traguiden.se/TGtemplates/popup1spalt.aspx?id=926 [Used 2014-05-12].

Svenskt Trä. (2014b). *Att välja trä. En faktaskrift om trä* [Online] Available: http://www.svenskttra.se/MediaBinaryLoader.axd?MediaArchive_FileID=d29f9522-ac5a-47b6-8f20-522578249af7&FileName=Att+v%C3%A4lja+tr%C3%A4+-+nionde+upplagan+2014.pdf [Used 2014-05-19].

Storbacka, K., Strandvik, T. & Grönroos, C. (1994). Relationships for Profit : The Dynamics of Relationship Quality. *International Journal of Service Industry Management* 5(5): 21–38.

Toivonen, R., Hansen, E., Järvinen, E., & Enroth, R. (2005). The Competitive Position of the Nordic Wood Industry in Germany – Intangible Quality Dimensions. *Silva Fennica* 39(2): 277–287.

Trost, J. (2005). *Kvalitativa Intervjuer*. Lund: Studentlitteratur.

Törrö, M. (2011). Entering new markets – are relationships important? [Unpublished manuscript]. SLU, Uppsala.

Vargo, S. L. & Lusch, R. F. (2004). Evolving to a New Dominant Logic for Marketing. Journal of Marketing 68(1): 1–17.

Valdez, A. & Kaplan, C.D. (1999) Reducing selection bias in the use of focus groups to investigate hidden populations: The case of Mexican-American gang members from South Texas. Drugs and Society 14: 209–224.

VIDA (2011). Vida nytt – VIDA tar marknadsandelar. [Online] Available: http://www.vida.se/media/44627/vidanytt_2011_nr2.pdf/, [Used 2014-02-03].

VIDA (2012). VIDA of Sweden - a global supplier of Scaninavian softwood. [Online] Available: http://www.vida.se/media/225247/201212_vida_wood_folder.pdf, [Used 2014-02-03].

VIDA (2014a). Om VIDA. [Online] Available: http://www.vida.se/sv/vida-koncernen/om-vida/, [Used 2014-02-03].

VIDA (2014b). Trävaror. [Online] Available: http://www.vida.se/sv/travaror/sortiment/travaror/, [Used 2014-02-03].

VIDA (2014c). Produktutveckling. [Online] Available: http://www.vida.se/sv/travaror/produktutveckling/, [Used 2014-02-03].
VIDA (2014d). Det var en gång en bondpojke från Ryd.
[Online] Available: http://www.vida.se/sv/vida-koncernen/om-vida/historik/, [Used 2014-06-16].
World Bank. (2014a). Population Projection Tables by Country and Group. [Online] Available: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTDATASTATISTICSHNP/EXTHNPSTATS/0,,contentMDK:21737699~menuPK:3385623~pagePK:64168445~piPK:64168309~theSitePK:3237118,00.html [Used 2014-02-07].
World Bank (2014b). France. [Online] Available: http://data.worldbank.org/country/france [Used 2012-02-08].
Woodstat (2014). France. [Online] Available: http://www.woodstat.se/Charts [Used 2014-02-20]
Yin, R.K. 2003. Case Study Research: Design and Methods. Third ed. Sage Publications:Thousand Oaks, CA.
Zhang, Y., Toppinen, A., & Uusivuori, J. (2014). Internationalization of the forest products industry: A synthesis of literature and implications for future research. *Forest Policy and Economics* 38: 8–16.
UNECE (2009) Forest Products Annual Market Review 2009-2010. New York and Geneva.
UNECE (2010a). The European Forest Sector Outlook Study II. Geneva.
UNECE (2010b). THE TIMBER MARKET IN FRANCE. [Online] Available: http://www.unece.org/fileadmin/DAM/timber/country-info/France-english-summary.pdf, [Used 2014-03-20].

## Personal communication

Johansson, M. (2014). Vice CEO, VIDA group and managing director, VIDA Wood AB. [2014-02-12]
Svensson, A. (2014). Quality manager, VIDA Wood. [2014-04-29]
Söderlind, J. (2014). International director, Swedish Wood. [2012-02-27]

# Appendices

## Appendix 1. Grading rules and commercially marketed dimensions in France

| Grade 1 | |
|---|---|
| Size of knots | 10% width + 20mm |
| Allowed knots | Sound, dead, intergrown bark |
| Knots per worst meter on face | 4 |
| Knots per worst on edge | 2 |
| Encased bark | 2 (100 mm maxi.) |
| Resin wood | Not permitted |
| Rot | Not allowed |
| Stain | Not permitted |
| Insect attacks | Not permitted |
| Wane | 5 mm (20% length) |
| Pith | Allowed |
| Splits | Not permitted |

| Softwood dimensions commercially marketed in France | | | |
|---|---|---|---|
| Goes by name (French) | Raw material | Thickness (mm) | Witdh (mm) |
| Feullet et planche | Fir, pine, spruce | 12,15,18,22,27,30,34,40 | 115 + |
| Frise et planchette | Fir, pine, spruce | 12, 15, 18,22,27,30,34,40 | 75,85,95,105 |
| Latte et liteau | Fir, pine, spruce | 14 x 27, 14 x 40, 27x27,27x40 | |
| Volige | Fir, pine, spruce | 14x105 | |
| Lambourde | Fir, pine, spruce | 38x40, 38x60 | |
| Chevron | Fir, pine, spruce | 50x70, 60x80, 75x75, 75x105 | |
| Bastaing | Fir, pine, spruce | 55x155, 63x165, 63x175 | |
| Madrier | Fir, pine, spruce | 75x205, 75x225, 105x225 | |
| Planche d'échafaudage | Fir, pine, spruce | 40x205 | |
| Planche | Fir, pine, spruce | 27x150, 27x200, 27x250 | |

## Appendix 2. Interview guide customers

| | |
|---|---|
| Date, time | |
| Name of the company | |
| Location | |
| Annual consumption of softwood $m^3$ | |
| And / or annual production $m^3$ etc | |
| Type of production | |
| Other type of function, namely: | |
| Number of employees | |
| Interviewed person, title | |

The purpose with the interview is to get a better understanding of what wood industry customers value regarding product and service quality from a supplier of softwood.
The goal is to create an understanding of the customers' most important criteria for the buying of softwood and to investigate how well the softwood suppliers are fulfilling the customers' demands regarding quality dimensions.

Open-ended questions

1. What are your general experience of doing business with softwood suppliers?
2. To what extent has your company been doing business with Nordic sawnwood suppliers?
3. What are your experiences of Nordic softwood?
4. What species and origin of raw material is most suitable for your company
5. Are there any differences between Finnish and Swedish suppliers of softwood, regarding e.g. product quality, delivery precision or keeping what is promised?
6. What are your experiences of Norwegian spruce from the Nordic countries in your production, and are there any preferable region?
7. What degree of refining is appropriate for you e.g. planed, stress-rated or just dried sawnwood?
8. What product quality level is used in your production? (U/S, V etcetera)
9. How well do you think that handling of complaints are working?
10. What are your views on certified (FSC/PEFC) softwood?
11. How is a supplier of softwood chosen at your company?
12. Are there any dimension of softwood quality that is very important for your company?
13. How large are a typical order of softwood? When do you buy spot quantities?
14. What characteristics does a supplier of softwood with long-term relationship have?
15. How fast do you need your ordered softwood? How often do you need to buy softwood?
16. What could softwood suppliers do to improve themselves, i.e. to better suit your needs?
17. Is there any more important aspect that I have forgotten?

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 = Not important at all<br>3 - 4 = Average importance<br>7 = Extremely important | | | | | | | | 1 = Very poor performance<br>3 - 4 = Average performance<br>7 = Perfomance is Very high | | | | | | |
| **Product quality** | **Degree of IMPORTANCE.** I.e*: how important is this dimension for your business?* | | | | | | | | **Current softwood suppliers' PERFORMANCE.** I.e. *how well are the current suppliers performing regarding this dimension?* | | | | | | |
| Scale (1-7) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Question. How important is…. | | | | | | | | | | | | | | | |
| 1. Size of knots? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Absence of wane? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Straightness of sawnwood? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Discoloration of wood. E.g. blue stain? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Absence of mechanical damage e.g. insect holes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Delivering planed sawnwood from sawmill? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Delivering stress-graded sawnwood from sawmill? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Accuracy in dimension and length? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Certification according to PEFC? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Certification according to FSC? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Perceived quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 11. The origin of the raw material? E.g. specific region? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Service quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 12. Supplier being able to supply fast (= your perception of fast)? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Supplier being reliable? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Supplier delivering according to what is agreed? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Service quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 15. Ease of handling complaints | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Supplier being able to support the appropriate use of the sawnwood? E.g. How to store it | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Supplier being able to fill orders of varying quantity? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | |
|---|---|
| Date, heure | |
| Nom de la compagnie | |
| Placement | |
| Consommation annuelle de "softwood" | |
| Et / ou production annuelle $m^3$ etc | |
| Type of production | |
| Autre type de fonction, notament: | |
| Nombre d'employés | |
| Personne interviewée, position | |

1 = Ne pas important du tout
3 - 4 = Importance moyenne
7 = Extrêmement important

1 = Performance mauvaise
3 - 4 = Performance moyenne
7 = Perfomance très élevée

| **Qualité du produit** | **Degrée d'IMPORTANCE.** *E.g: Quelle est l'importance de cette dimension pour votre compagnie?* | | | | | | | | **Performance des furniseurs actuels de "softwood".** *E.g. Concernant ce composant-ci, quelle est la performance des fourniseurs actuels?* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Échelle (1-7) | | | | | | | | | | | | | | | |
| Question. Quelle est l'importanc | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Grandeur des noeud? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Absence de flache? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Rectitude de bois? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Décoloration de bois. E.g. Bleuissement de grume? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Absence de nuisance méchanique e.g. Des trous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Livraison planifié de "sawnwood" de la scierie? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Livraison de sawnwood stress classe de la scierie? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Précision des dimensions et de longueur? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Certification PEFC? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Certification FSC? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Qualité du produit** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 11. The origin of the raw material? E.g. specific region? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Service quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 12. Livraison rapide du fourniseur (= votre perception de rapide) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Fourniseur fiable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Fourniseur fait livrer ce que vous avez convenu? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Service quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 15. Facilité de traitment des plaintes | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Fourniseur capable de supporter l'usage correct de bois | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Fourniseur capable de fournir des demandes de quantités variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Appendix 3. Interview guide Softwood supplier, trader and softwood distributor

The purpose with the interview is to get a better understanding of what softwood actors have experienced on the French market regarding market related issues.
The goal is to create an understanding of softwood actors' previous experiences on the French market and implications for managerial advice.
In the questionnaire, softwood actors are asked to fill in what they think that French wood industry customers sees like important, and how well the softwood suppliers are performing on the different dimensions.

Open-ended questions

1. Can you tell me about the background of the company and main operation?
2. What is important when acting on the French market for softwood, comparing to other markets?
3. Are there different markets inside France, and if so, what differs?
4. What do you think that French customers think about Swedish softwood?
5. How would you describe a customers' relationship with a softwood supplier regarding relationship longevity? When are the customers buying spot volumes?
6. Which are the typical end-users of softwood and how do their wanted requirements of softwood differ?
7. What are the French customers perception of domestic sawnwood? Are there growing interest in utilizing this in the industry?
8. What degree of refining are the different French softwood customers using?
9. Are there certain quality defects that the different French softwood customers cannot accept?
10. How important is certified (FSC/PEFC) softwood for the customers?
11. Which are the biggest "Nordic" suppliers of softwood to France and why?
12. What are the most used dimensions and quality grades of the different French softwood customers?
13. Are there any special obstacles that a softwood supplier need to consider to be successful on the French market?
14. How fast do the customers need their ordered softwood? How often are they making orders?
15. Do the different French softwood customers change supplier if another supplier with lower price is identified?
16. Are there any differing wood traditions in France, comparing to Sweden?

1 = Not important at all
3 - 4 = Average importance
7 = Extremely important

1 = Very poor performance
3 - 4 = Average performance
7 = Perfomance is Very high

| **Product quality** | **Degree of IMPORTANCE.** I.e*: how important do you think this dimension is for french customers?* | | | | | | | | **Current softwood suppliers' PERFORMANCE.** I.e. *how well do you think suppliers of softwood are performing regarding this dimension?* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scale (1-7) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Question. How important is…. | | | | | | | | | | | | | | | |
| 1. Size of knots? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Absence of wane? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Straightness of sawnwood? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Discoloration of wood. E.g. blue stain? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Absence of mechanical damage e.g. insect holes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Delivering planed sawnwood from sawmill? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Delivering stress-graded sawnwood from sawmill? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Accuracy in dimension and length? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Certification according to PEFC? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Certification according to FSC? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Perceived quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 11. The origin of the raw material? E.g. specific region? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Service quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 12. Supplier being able to supply fast (= your perception of fast)? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Supplier being reliable? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Supplier delivering according to what is agreed? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Service quality** | X | X | X | X | X | X | X | | X | X | X | X | X | X | X |
| 15. Ease of handling complaints | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Supplier being able to support the appropriate use of the sawnwood? E.g. How to store it | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Supplier being able to fill orders of varying quantity? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

# Publications from
# The Department of Forest Products,
# SLU, Uppsala

## Rapporter/Reports

1. Ingemarson, F. 2007. De skogliga tjänstemännens syn på arbetet i Gudruns spår. Institutionen för skogens produkter, SLU, Uppsala
2. Lönnstedt, L. 2007. *Financial analysis of the U.S. based forest industry*. Department of Forest Products, SLU, Uppsala
4. Stendahl, M. 2007. *Product development in the Swedish and Finnish wood industry.* Department of Forest Products, SLU, Uppsala
5. Nylund, J-E. & Ingemarson, F. 2007. *Forest tenure in Sweden – a historical perspective.* Department of Forest Products, SLU, Uppsala
6. Lönnstedt, L. 2008. *Forest industrial product companies – A comparison between Japan, Sweden and the U.S.* Department of Forest Products, SLU, Uppsala
7. Axelsson, R. 2008. Forest policy, continuous tree cover forest and uneven-aged forest management in Sweden's boreal forest. Licentiate thesis. Department of Forest Products, SLU, Uppsala
8. Johansson, K-E.V. & Nylund, J-E. 2008. NGO Policy Change in Relation to Donor Discourse. Department of Forest Products, SLU, Uppsala
9. Uetimane Junior, E. 2008. Anatomical and Drying Features of Lesser Known Wood Species from Mozambique. Licentiate thesis. Department of Forest Products, SLU, Uppsala
10. Eriksson, L., Gullberg, T. & Woxblom, L. 2008. Skogsbruksmetoder för privatskogs-brukaren. *Forest treatment methods for the private forest owner.* Institutionen för skogens produkter, SLU, Uppsala
11. Eriksson, L. 2008. Åtgärdsbeslut i privatskogsbruket. *Treatment decisions in privately owned forestry.* Institutionen för skogens produkter, SLU, Uppsala
12. Lönnstedt, L. 2009. *The Republic of South Africa's Forets Sector.* Department of Forest Products, SLU, Uppsala
13. Blicharska, M. 2009. *Planning processes for transport and ecological infrastructures in Poland – actors' attitudes and conflict.* Licentiate thesis. Department of Forest Products, SLU, Uppsala
14. Nylund, J-E. 2009. *Forestry legislation in Sweden*. Department of Forest Products, SLU, Uppsala
15. Björklund, L., Hesselman, J., Lundgren, C. & Nylinder, M. 2009. Jämförelser mellan metoder för fastvolymbestämning av stockar. Institutionen för skogens produkter, SLU, Uppsala
16. Nylund, J-E. 2010. *Swedish forest policy since 1990 – reforms and consequences***.** Department of Forest Products, SLU, Uppsala
17. Eriksson, L., m.fl. 2011. Skog på jordbruksmark – erfarenheter från de senaste decennierna. Institutionen för skogens produkter, SLU, Uppsala
18. Larsson, F. 2011. Mätning av bränsleved – Fastvolym, torrhalt eller vägning? Institutionen för skogens produkter, SLU, Uppsala
19. Karlsson, R., Palm, J., Woxblom, L. & Johansson, J. 2011. Konkurrenskraftig kundanpassad affärsutveckling för lövträ - Metodik för samordnad affärs- och teknikutveckling inom leverantörskedjan för björkämnen. Institutionen för skogens produkter, SLU, Uppsala
20. Hannerz, M. & Bohlin, F., 2012. Markägares attityder till plantering av poppel, hybridasp och *Salix* som energigrödor – en enkätundersökning. Institutionen för skogens produkter, SLU, Uppsala
21. Nilsson, D., Nylinder, M., Fryk, H. & Nilsson, J. 2012. Mätning av grotflis. *Measuring of fuel chips.* Institutionen för skogens produkter, SLU, Uppsala
22. Sjöstedt, V. 2013. *The Role of Forests in Swedish Media Response to Climate Change – Frame analysis of media 1992-2010.* Licentiate thesis. Department of Forest Products, SLU, Uppsala
23. Nylinder, M. & Fryk, H. 2014. Mätning av delkvistad energived. Institutionen för skogens produkter, SLU, Uppsala

# Examensarbeten/Master Thesis

1. Stangebye, J. 2007. Inventering och klassificering av kvarlämnad virkesvolym vid slutavverkning. *Inventory and classification of non-cut volumes at final cut operations.* Institutionen för skogens produkter, SLU, Uppsala
2. Rosenquist, B. 2007. Bidragsanalys av dimensioner och postningar – En studie vid Vida Alvesta. *Financial analysis of economic contribution from dimensions and sawing patterns – A study at Vida Alvesta.* Institutionen för skogens produkter, SLU, Uppsala
3. Ericsson, M. 2007. En lyckad affärsrelation? – Två fallstudier. *A successful business relation? – Two case studies.* Institutionen för skogens produkter, SLU, Uppsala
4. Ståhl, G. 2007. Distribution och försäljning av kvalitetsfuru – En fallstudie. *Distribution and sales of high quality pine lumber – A case study*. Institutionen för skogens produkter, SLU, Uppsala
5. Ekholm, A. 2007. Aspekter på flyttkostnader, fastighetsbildning och fastighetstorlekar. *Aspects on fixed harvest costs and the size and dividing up of forest estates.* Institutionen för skogens produkter, SLU, Uppsala
6. Gustafsson, F. 2007. Postningsoptimering vid sönderdelning av fura vid Säters Ångsåg. *Saw pattern optimising for sawing Scots pine at Säters Ångsåg*. Institutionen för skogens produkter, SLU, Uppsala
7. Götherström, M. 2007. Följdeffekter av olika användningssätt för vedråvara – en ekonomisk studie. *Consequences of different ways to utilize raw wood – an economic study*. Institutionen för skogens produkter, SLU, Uppsala
8. Nashr, F. 2007. *Profiling the strategies of Swedish sawmilling firms.* Department of Forest Products, SLU, Uppsala
9. Högsborn, G. 2007. Sveriges producenter och leverantörer av limträ – En studie om deras marknader och kundrelationer. *Swedish producers and suppliers of glulam – A study about their markets and customer relations.* Institutionen för skogens produkter, SLU, Uppsala
10. Andersson, H. 2007. *Establishment of pulp and paper production in Russia – Assessment of obstacles.* Etablering av pappers- och massaproduktion i Ryssland – bedömning av möjliga hinder. Department of Forest Products, SLU, Uppsala
11. Persson, F. 2007. Exponering av trägolv och lister i butik och på mässor – En jämförande studie mellan sport- och bygghandeln. Institutionen för skogens produkter, SLU, Uppsala
12. Lindström, E. 2008. En studie av utvecklingen av drivningsnettot i skogsbruket. *A study of the net conversion contribution in forestry.* Institutionen för skogens produkter, SLU, Uppsala
13. Karlhager, J. 2008. *The Swedish market for wood briquettes – Production and market development.* Department of Forest Products, SLU, Uppsala
14. Höglund, J. 2008. *The Swedish fuel pellets industry: Production, market and standardization*. Den Svenska bränslepelletsindustrin: Produktion, marknad och standardisering. Department of Forest Products, SLU, Uppsala
15. Trulson, M. 2008. Värmebehandlat trä – att inhämta synpunkter i produktutvecklingens tidiga fas. *Heat-treated wood – to obtain opinions in the early phase of product development.* Institutionen för skogens produkter, SLU, Uppsala
16. Nordlund, J. 2008. Beräkning av optimal batchstorlek på gavelspikningslinjer hos Vida Packaging i Hestra. *Calculation of optimal batch size on cable drum flanges lines at Vida Packaging in Hestra*. Institutionen för skogens produkter, SLU, Uppsala
17. Norberg, D. & Gustafsson, E. 2008. *Organizational exposure to risk of unethical behaviour – In Eastern European timber purchasing organizations.* Department of Forest Products, SLU, Uppsala
18. Bäckman, J. 2008. Kundrelationer – mellan Setragroup AB och bygghandeln. *Customer Relationsship – between Setragroup AB and the DIY-sector.* Institutionen för skogens produkter, SLU, Uppsala
19. Richnau, G. 2008. *Landscape approach to implement sustainability policies? - value profiles of forest owner groups in the Helgeå river basin, South Sweden.* Department of Forest Products, SLU, Uppsala
20. Sokolov, S. 2008. *Financial analysis of the Russian forest product companies.* Department of Forest Products, SLU, Uppsala
21. Färlin, A. 2008. *Analysis of chip quality and value at Norske Skog Pisa Mill, Brazil*. Department of Forest Products, SLU, Uppsala
22. Johansson. N. 2008. *An analysis of the North American market for wood scanners.* En analys över den Nordamerikanska marknaden för träscanners. Department of Forest Products, SLU, Uppsala
23. Terzieva, E. 2008. *The Russian birch plywood industry – Production, market and future prospects*. Den ryska björkplywoodindustrin – Produktion, marknad och framtida utsikter. Department of Forest Products, SLU, Uppsala
24. Hellberg, L. 2008. Kvalitativ analys av Holmen Skogs internprissättningsmodell. *A qualitative analysis of Holmen Skogs transfer pricing method.* Institutionen för skogens produkter, SLU, Uppsala

25. Skoglund, M. 2008. Kundrelationer på Internet – en utveckling av Skandias webbplats. *Customer relationships through the Internet – developing Skandia's homepages.* Institutionen för skogens produkter, SLU, Uppsala
26. Hesselman, J. 2009. Bedömning av kunders uppfattningar och konsekvenser för strategisk utveckling. *Assessing customer perceptions and their implications for strategy development.* Institutionen för skogens produkter, SLU, Uppsala
27. Fors, P-M. 2009. *The German, Swedish and UK wood based bio energy markets from an investment perspective, a comparative analysis.* Department of Forest Products, SLU, Uppsala
28. Andræ, E. 2009. *Liquid diesel biofuel production in Sweden – A study of producers using forestry- or agricultural sector feedstock.* Produktion av förnyelsebar diesel – en studie av producenter av biobränsle från skogs- eller jordbrukssektorn. Department of Forest Products, SLU, Uppsala
29. Barrstrand, T. 2009. Oberoende aktörer och Customer Perceptions of Value. *Independent actors and Customer Perception of Value.* Institutionen för skogens produkter, SLU, Uppsala
30. Fälldin, E. 2009. Påverkan på produktivitet och produktionskostnader vid ett minskat antal timmerlängder. *The effect on productivity and production cost due to a reduction of the number of timber lengths.* Institutionen för skogens produkter, SLU, Uppsala
31. Ekman, F. 2009. Stormskadornas ekonomiska konsekvenser – Hur ser försäkringsersättningsnivåerna ut inom familjeskogsbruket? *Storm damage's economic consequences – What are the levels of compensation for the family forestry?* Institutionen för skogens produkter, SLU, Uppsala
32. Larsson, F. 2009. Skogsmaskinföretagarnas kundrelationer, lönsamhet och produktivitet. *Customer relations, profitability and productivity from the forest contractors point of view.* Institutionen för skogens produkter, SLU, Uppsala
33. Lindgren, R. 2009. Analys av GPS Timber vid Rundviks sågverk. *An analysis of GPS Timber at Rundvik sawmill.* Institutionen för skogens produkter, SLU, Uppsala
34. Rådberg, J. & Svensson, J. 2009. Svensk skogsindustris framtida konkurrensfördelar – ett medarbetarperspektiv. *The competitive advantage in future Swedish forest industry – a co-worker perspective.* Institutionen för skogens produkter, SLU, Uppsala
35. Franksson, E. 2009. Framtidens rekrytering sker i dag – en studie av ingenjörsstudenters uppfattningar om Södra. *The recruitment of the future occurs today – A study of engineering students' perceptions of Södra.* Institutionen för skogens produkter, SLU, Uppsala
36. Jonsson, J. 2009. *Automation of pulp wood measuring – An economical analysis.* Department of Forest Products, SLU, Uppsala
37. Hansson, P. 2009. *Investment in project preventing deforestation of the Brazilian Amazonas***.** Department of Forest Products, SLU, Uppsala
38. Abramsson, A. 2009. Sydsvenska köpsågverksstrategier vid stormtimmerlagring. *Strategies of storm timber storage at sawmills in Southern Sweden.* Institutionen för skogens produkter, SLU, Uppsala
39. Fransson, M. 2009. Spridning av innovationer av träprodukter i byggvaruhandeln. *Diffusion of innovations – contrasting adopters views with non adopters.* Institutionen för skogens produkter, SLU, Uppsala
40. Hassan, Z. 2009. *A Comparison of Three Bioenergy Production Systems Using Lifecycle Assessment.* Department of Forest Products, SLU, Uppsala
41. Larsson, B. 2009. Kunders uppfattade värde av svenska sågverksföretags arbete med CSR. *Customer perceived value of Swedish sawmill firms work with CSR.* Institutionen för skogens produkter, SLU, Uppsala
42. Raditya, D. A. 2009. *Case studies of Corporate Social Responsibility (CSR) in forest products companies - and customer's perspectives.* Department of Forest Products, SLU, Uppsala
43. Cano, V. F. 2009. *Determination of Moisture Content in Pine Wood Chips.* Bachelor Thesis. Department of Forest Products, SLU, Uppsala
44. Arvidsson, N. 2009. Argument för prissättning av skogsfastigheter. *Arguments for pricing of forest estates.* Institutionen för skogens produkter, SLU, Uppsala
45. Stjernberg, P. 2009. Det hyggesfria skogsbruket vid Yttringe – vad tycker allmänheten? *Continuous cover forestry in Yttringe – what is the public opinion?* Institutionen för skogens produkter, SLU, Uppsala
46. Carlsson, R. 2009. *Fire impact in the wood quality and a fertilization experiment in Eucalyptus plantations in Guangxi, southern China.* Brandinverkan på vedkvaliteten och tillväxten i ett gödselexperiment i Guangxi, södra Kina. Department of Forest Products, SLU, Uppsala
47. Jerenius, O. 2010. Kundanalys av tryckpappersförbrukare i Finland. *Customer analysis of paper printers in Finland.* Institutionen för skogens produkter, SLU, Uppsala
48. Hansson, P. 2010. Orsaker till skillnaden mellan beräknad och inmätt volym grot. *Reasons for differences between calculated and scaled volumes of tops and branches.* Institutionen för skogens produkter, SLU, Uppsala

49. Eriksson, A. 2010. *Carbon Offset Management - Worth considering when investing for reforestation CDM.* Department of Forest Products, SLU, Uppsala
50. Fallgren, G. 2010. På vilka grunder valdes limträleverantören? – En studie om hur Setra bör utveckla sitt framtida erbjudande. *What was the reason for the choise of glulam deliverer? -A studie of proposed future offering of Setra.* Institutionen för skogens produkter, SLU, Uppsala
51. Ryno, O. 2010. Investeringskalkyl för förbättrat värdeutbyte av furu vid Krylbo sågverk. *Investment Calculation to Enhance the Value of Pine at Krylbo Sawmill*. Institutionen för skogens produkter, SLU, Uppsala
52. Nilsson, J. 2010. Marknadsundersökning av färdigkapade produkter. *Market investigation of pre cut lengths.* Institutionen för skogens produkter, SLU, Uppsala
53. Mörner, H. 2010. Kundkrav på biobränsle. *Customer Demands for Bio-fuel*. Institutionen för skogens produkter, SLU, Uppsala
54. Sunesdotter, E. 2010. Affärsrelationers påverkan på Kinnarps tillgång på FSC-certifierad råvara. Business Relations Influence on Kinnarps' Supply of FSC Certified Material. Institutionen för skogens produkter, SLU, Uppsala
55. Bengtsson, W. 2010. Skogsfastighetsmarknaden, 2005-2009, i södra Sverige efter stormarna. *The market for private owned forest estates, 2005-2009, in the south of Sweden after the storms*. Institutionen för skogens produkter, SLU, Uppsala
56. Hansson, E. 2010. Metoder för att minska kapitalbindningen i Stora Enso Bioenergis terminallager. *Methods to reduce capital tied up in Stora Enso Bioenergy terminal stocks.* Institutionen för skogens produkter, SLU, Uppsala
57. Johansson, A. 2010. Skogsallmänningars syn på deras bankrelationer. *The commons view on their bank relations*. Institutionen för skogens produkter, SLU, Uppsala
58. Holst, M. 2010. Potential för ökad specialanpassning av trävaror till byggföretag – nya möjligheter för träleverantörer? *Potential for greater customization of the timber to the construction company – new opportunities for wood suppliers?* Institutionen för skogens produkter, SLU, Uppsala
59. Ranudd, P. 2010. Optimering av råvaruflöden för Setra. Optimizing Wood Supply for Setra. Institutionen för skogens produkter, SLU, Uppsala
60. Lindell, E. 2010. Rekreation och Natura 2000 – målkonflikter mellan besökare och naturvård i Stendörrens naturreservat. *Recreation in Natura 2000 protected areas – visitor and conservation conflicts*. Institutionen för skogens produkter, SLU, Uppsala
61. Coletti Pettersson, S. 2010. Konkurrentanalys för Setragroup AB, Skutskär. *Competitive analysis of Setragroup AB, Skutskär*. Institutionen för skogens produkter, SLU, Uppsala
62. Steiner, C. 2010. Kostnader vid investering i flisaggregat och tillverkning av pellets – En komparativ studie. *Expenses on investment in wood chipper and production of pellets – A comparative study.* Institutionen för skogens produkter, SLU, Uppsala
63. Bergström, G. 2010. Bygghandelns inköpsstrategi för träprodukter och framtida efterfrågan på produkter och tjänster. *Supply strategy for builders merchants and future demands for products and services.* Institutionen för skogens produkter, SLU, Uppsala
64. Fuente Tomai, P. 2010. *Analysis of the Natura 2000 Networks in Sweden and Spain.* Bachelor Thesis. Department of Forest Products, SLU, Uppsala
65. Hamilton, C-F. 2011. Hur kan man öka gallringen hos privata skogsägare? En kvalitativ intervjustudie. *How to increase the thinning at private forest owners? A qualitative questionnaire.* Institutionen för skogens produkter, SLU, Uppsala
66. Lind, E. 2011. Nya skogsbaserade material – Från Labb till Marknad. *New wood based materials – From Lab to Market.* Institutionen för skogens produkter, SLU, Uppsala
67. Hulusjö, D. 2011. Förstudie om e-handel vid Stora Enso Packaging AB. *Pilot study on e-commerce at Stora Enso Packaging AB*. Institutionen för skogens produkter, SLU, Uppsala
68. Karlsson, A. 2011. Produktionsekonomi i ett lövsågverk. *Production economy in a hardwood sawmill.* Institutionen för skogens produkter, SLU, Uppsala
69. Bränngård, M. 2011. En konkurrensanalys av SCA Timbers position på den norska bygghandelsmarknaden. *A competitive analyze of SCA Timbers position in the Norwegian builders merchant market.* Institutionen för skogens produkter, SLU, Uppsala
70. Carlsson, G. 2011. Analysverktyget Stockluckan – fast eller rörlig postning? *Fixed or variable tuning in sawmills? – an analysis model.* Institutionen för skogens produkter, SLU, Uppsala
71. Olsson, A. 2011. Key Account Management – hur ett sågverksföretag kan hantera sina nyckelkunder. *Key Account Management – how a sawmill company can handle their key customers.* Institutionen för skogens produkter, SLU, Uppsala

72. Andersson, J. 2011. Investeringsbeslut för kraftvärmeproduktion i skogsindustrin. *Investment decisions for CHP production in The Swedish Forest Industry*. Institutionen för skogens produkter, SLU, Uppsala
73. Bexell, R. 2011. Hög fyllnadsgrad i timmerlagret – En fallstudie av Holmen Timbers sågverk i Braviken. *High filling degree in the timber yard – A case study of Holmen Timber´s sawmill in Braviken*. Institutionen för skogens produkter, SLU, Uppsala
74. Bohlin, M. 2011. Ekonomisk utvärdering av ett grantimmersortiment vid Bergkvist Insjön. *Economic evaluation of one spruce timber assortment at Bergkvist Insjön*. Institutionen för skogens produkter, SLU, Uppsala
75. Enqvist, I. 2011. Psykosocial arbetsmiljö och riskbedömning vid organisationsförändring på Stora Enso Skutskär. *Psychosocial work environment and risk assessment prior to organizational change at Stora Enso Skutskär.* Institutionen för skogens produkter, SLU, Uppsala
76. Nylinder, H. 2011. Design av produktkalkyl för vidareförädlade trävaror. *Product Calculation Design For Planed Wood Products*. Institutionen för skogens produkter, SLU, Uppsala
77. Holmström, K. 2011. Viskosmassa – framtid eller fluga. *Viscose pulp – fad or future*. Institutionen för skogens produkter, SLU, Uppsala
78. Holmgren, R. 2011. Norra Skogsägarnas position som trävaruleverantör – en marknadsstudie mot bygghandeln i Sverige och Norge. *Norra Skogsagarnas position as a wood-product supplier – A market investigation towards the builder-merchant segment in Sweden and Norway*. Institutionen för skogens produkter, SLU, Uppsala
79. Carlsson, A. 2011. Utvärdering och analys av drivningsentreprenörer utifrån offentlig ekonomisk information. *Evaluation and analysis of harvesting contractors on the basis of public financial information.* Institutionen för skogens produkter, SLU, Uppsala
80. Karlsson, A. 2011. Förutsättningar för betalningsgrundande skördarmätning hos Derome Skog AB. *Possibilities for using harvester measurement as a basis for payment at Derome Skog AB.* Institutionen för skogens produkter, SLU, Uppsala
81. Jonsson, M. 2011. Analys av flödesekonomi - Effektivitet och kostnadsutfall i Sveaskogs verksamhet med skogsbränsle. *Analysis of the Supply Chain Management - Efficiency and cost outcomes of the business of forest fuel in Sveaskog.* Institutionen för skogens produkter, SLU, Uppsala
82. Olsson, J. 2011. Svensk fartygsimport av fasta trädbaserade biobränslen – en explorativ studie. *Swedish import of solid wood-based biofuels – an exploratory study.* Institutionen för skogens produkter, SLU, Uppsala
83. Ols, C. 2011. *Retention of stumps on wet ground at stump-harvest and its effects on saproxylic insects.* Bevarande av stubbar vid stubbrytning på våt mark och dess inverkan på vedlevande insekter. Department of Forest Products, SLU, Uppsala
84. Börjegren, M. 2011. Utvärdering av framtida mätmetoder. *Evaluation of future wood measurement methods.* Institutionen för skogens produkter, SLU, Uppsala
85. Engström, L. 2011. Marknadsundersökning för högvärdiga produkter ur klenkubb. *Market survey for high-value products from thin sawn timber.* Institutionen för skogens produkter, SLU, Uppsala
86. Thorn-Andersen, B. 2012. Nuanskaffningskostnad för Jämtkrafts fjärrvärmeanläggningar. *Today-acquisition-cost for the district heating facilities of Jämtkraft.* Institutionen för skogens produkter, SLU, Uppsala
87. Norlin, A. 2012. Skogsägarföreningarnas utveckling efter krisen i slutet på 1970-talet – en analys av förändringar och trender. *The development of forest owners association's in Sweden after the crisis in the late 1970s – an analysis of changes and trends.* Institutionen för skogens produkter, SLU, Uppsala
88. Johansson, E. 2012. Skogsbränslebalansen i Mälardalsområdet – Kraftvärmeverkens syn på råvaruförsörjningen 2010-2015. *The balance of wood fuel in the region of Mälardalen – The CHP plants view of the raw material supply 2010-2015.* Institutionen för skogens produkter, SLU, Uppsala
89. Biruk, K. H. 2012. *The Contribution of Eucalyptus Woodlots to the Livelihoods of Small Scale Farmers in Tropical and Subtropical Countries with Special Reference to the Ethiopian Highlands.* Department of Forest Products, SLU, Uppsala
90. Otuba, M. 2012. *Alternative management regimes of Eucalyptus: Policy and sustainability issues of smallholder eucalyptus woodlots in the tropics and sub-tropics.* Department of Forest Products, SLU, Uppsala
91. Edgren, J. 2012. *Sawn softwood in Egypt – A market study.* En marknadsundersökning av den Egyptiska barrträmarknaden. Department of Forest Products, SLU, Uppsala
92. Kling, K. 2012. *Analysis of eucalyptus plantations on the Iberian Peninsula.* Department of Forest Products, SLU, Uppsala
93. Heikkinen, H. 2012. Mätning av sorteringsdiameter för talltimmer vid Kastets sågverk. *Measurement of sorting diameter for pine logs at Kastet Sawmill.* Institutionen för skogens produkter, SLU, Uppsala

94. Munthe-Kaas, O. S. 2012. Markedsanalyse av skogforsikring i Sverige og Finland. *Market analysis of forest insurance in Sweden and Finland.* Institutionen för skogens produkter, SLU, Uppsala
95. Dietrichson, J. 2012. Specialsortiment på den svenska rundvirkesmarknaden – En kartläggning av virkeshandel och -mätning. *Special assortments on the Swedish round wood market – A survey of wood trade and measuring*. Institutionen för skogens produkter, SLU, Uppsala
96. Holmquist, V. 2012. Timmerlängder till Iggesunds sågverk. *Timber lenghts for Iggesund sawmill*. Institutionen för skogens produkter, SLU, Uppsala
97. Wallin, I. 2012. *Bioenergy from the forest – a source of conflict between forestry and nature conservation? – an analysis of key actor's positions in Sweden.* Department of Forest Products, SLU, Uppsala
98. Ederyd, M. 2012. Användning av avverkningslikvider bland svenska enskilda skogsägare. *Use of harvesting payments among Swedish small-scale forest owners.* Institutionen för skogens produkter, SLU, Uppsala
99. Högberg, J. 2012. Vad påverkar marknadsvärdet på en skogsfastighet? - En statistisk analys av markvärdet. *Determinants of the market value of forest estates. - A statistical analysis of the land value.* Institutionen för skogens produkter, SLU, Uppsala
100. Sääf, M. 2012. Förvaltning av offentliga skogsfastigheter – Strategier och handlingsplaner. *Management of Municipal Forests – Strategies and action plans.* Institutionen för skogens produkter, SLU, Uppsala
101. Carlsson, S. 2012. Faktorer som påverkar skogsfastigheters pris. *Factors affecting the price of forest estates.* Institutionen för skogens produkter, SLU, Uppsala
102. Ek, S. 2012. FSC-Fairtrade certifierade trävaror – en marknadsundersökning av två byggvaruhandlare och deras kunder. *FSC-Fairtrade labeled wood products – a market investigation of two builders' merchants, their business customers and consumers.* Institutionen för skogens produkter, SLU, Uppsala
103. Bengtsson, P. 2012. Rätt pris för timmerråvaran – en kalkylmodell för Moelven Vänerply AB. Right price for raw material – a calculation model for Moelven Vänerply AB. Institutionen för skogens produkter, SLU, Uppsala
104. Hedlund Johansson, L. 2012. Betalningsplaner vid virkesköp – förutsättningar, möjligheter och risker. *Payment plans when purchasing lumber – prerequisites, possibilities and risks.* Institutionen för skogens produkter, SLU, Uppsala
105. Johansson, A. 2012. *Export of wood pellets from British Columbia – a study about the production environment and international competitiveness of wood pellets from British Columbia.* Träpelletsexport från British Columbia – en studie om förutsättningar för produktion och den internationella konkurrenskraften av träpellets från British Columbia. Department of Forest Products, SLU, Uppsala
106. af Wåhlberg, G. 2012. Strategiska val för Trivselhus, en fallstudie. *Strategic choices for Trivselhus, a case study.* Institutionen för skogens produkter, SLU, Uppsala
107. Norlén, M. 2012. Utvärdering av nya affärsområden för Luna – en analys av hortikulturindustrin inom EU. *Assessment of new market opportunities for Luna – an analysis of the horticulture industry in the EU.* Institutionen för skogens produkter, SLU, Uppsala
108. Pilo, B. 2012. Produktion och beståndsstruktur i fullskiktad skog skött med blädningsbruk. *Production and Stand Structure in Uneven-Aged Forests managed by the Selection System.* Institutionen för skogens produkter, SLU, Uppsala
109. Elmkvist, E. 2012. Den ekonomiska konsekvensen av ett effektiviseringsprojekt – fallet förbättrad timmersortering med hjälp av röntgen och 3D-mätram. *The economic consequences of an efficiency project - the case of improved log sorting using X-ray and 3D scanning.* Institutionen för skogens produkter, SLU, Uppsala
110. Pihl, F. 2013. Beslutsunderlag för besökarundersökningar - En förstudie av Upplandsstiftelsens naturområden. *Decision Basis for Visitor Monitoring – A pre-study of Upplandsstiftelsen's nature sites*. Institutionen för skogens produkter, SLU, Uppsala
111. Hulusjö, D. 2013. *A value chain analysis for timber in four East African countries – an exploratory case study.* En värdekedjeanalys av virke i fyra Östafrikanska länder – en explorativ fallstudie. Bachelor Thesis. Department of Forest Products, SLU, Uppsala
112. Ringborg, N. 2013. Likviditetsanalys av belånade skogsfastigheter. *Liquidity analysis of leveraged forest properties.* Institutionen för skogens produkter, SLU, Uppsala
113. Johnsson, S. 2013. Potential för pannvedsförsäljning i Nederländerna - en marknadsundersökning. *Potential to sell firewood in the Netherlands – a market research.* Institutionen för skogens produkter, SLU, Uppsala
114. Nielsen, C. 2013. Innovationsprocessen: Från förnyelsebart material till produkt. *The innovation process: From renewable material to product.* Institutionen för skogens produkter, SLU, Uppsala
115. Färdeman, D. 2013. Förutsättningar för en lyckad lansering av "Modultrall"- En studie av konsumenter, små byggföretag och bygghandeln. *Prerequisites for a successful launch of Modular Decking - A study of consumers, small buildering firms and builders merchants firms*. Institutionen för skogens produkter, SLU, Uppsala

116. af Ekenstam, C. 2013. Produktionsplanering – fallstudie av sågverksplanering, kontroll och hantering. *Production – case study of sawmill Planning Control and Management.* Institutionen för skogens produkter, SLU, Uppsala
117. Sundby, J. 2013. Affärsrådgivning till privatskogsägare – en marknadsundersökning. *Business consultation for non-industry private forest owners – a market survey.* Institutionen för skogens produkter, SLU, Uppsala
118. Nylund, O. 2013. Skogsbränslekedjan och behov av avtalsmallar för skogsbränsleentreprenad. *Forest fuel chain and the need for agreement templates in the forest fuel industry.* Institutionen för skogens produkter, SLU, Uppsala
119. Hoflund, P. 2013. Sågklassläggning vid Krylbo såg – En studie med syfte att öka sågutbytet. *Saw class distribution at Krylbo sawmill - a study with the aim to increase the yield.* Institutionen för skogens produkter, SLU, Uppsala
120. Snögren, J. 2013. Kundportföljen i praktiken – en fallstudie av Orsa Lamellträ AB. *Customer portfolio in practice – a case study of Orsa Lamellträ AB.* Institutionen för skogens produkter, SLU, Uppsala
121. Backman, E. 2013. Förutsättningar vid köp av en skogsfastighet – en analys av olika köpares kassaflöde vid ett fastighetsförvärv. *Conditions in an acquisition of a forest estate – an analysis of different buyers cash flow in a forest estate acquisition.* Institutionen för skogens produkter, SLU, Uppsala
122. Jacobson Thalén, C. 2013. Påverkan av e-handelns framtida utveckling på pappersförpackningsbranschen. *The future impact on the paper packaging industry from online sales.* Institutionen för skogens produkter, SLU, Uppsala
123. Johansson, S. 2013. Flödesstyrning av biobränsle till kraftvärmeverk – En fallstudie av Ryaverket. *Suggestions for a more efficient flow of biofuel to Rya Works (Borås Energi och Miljö AB).* Institutionen för skogens produkter, SLU, Uppsala
124. von Ehrenheim, L. 2013. *Product Development Processes in the Nordic Paper Packaging Companies: An assessments of complex processes*. Produktutvecklingsprocesser i de nordiska pappersförpackningsföretagen: En analys av komplexa processer. Department of Forest Products, SLU, Uppsala
125. Magnusson, D. 2013. Investeringsbedömning för AB Karl Hedins Sågverk i Krylbo. *Evaluation of an investement at AB Karl Hedin's sawmill in Krylbo.* Institutionen för skogens produkter, SLU, Uppsala
126. Fernández-Cano, V. 2013. *Epoxidised linseed oil as hydrophobic substance for wood protection - technology of treatment and properties of modified wood.* Epoxiderad linolja som hydrofob substans för träskydd - teknologi för behandling och egenskaper av modifierat trä. Department of Forest Products, SLU, Uppsala
127. Lönnqvist, W. 2013. Analys av värdeoptimeringen i justerverket – Rörvik Timber. *Analysis of Value optimization in the final grading – Rörvik Timber.* Institutionen för skogens produkter, SLU, Uppsala
128. Pettersson, T. 2013. Rätt val av timmerråvara – kan lönsamheten förbättras med en djupare kunskap om timrets ursprung? *The right choice of saw logs – is it possible to increase profitability with a deeper knowledge about the saw logs' origin?* Institutionen för skogens produkter, SLU, Uppsala
129. Schotte, P. 2013. Effekterna av en ny råvara och en ny produktmix i en komponentfabrik. *Effects of a new raw material and a new productmix in a component factory*. Institutionen för skogens produkter, SLU, Uppsala
130. Thiger, E. 2014. Produktutveckling utifrån nya kundinsikter. *Product development based on new customer insights*. Institutionen för skogens produkter, SLU, Uppsala
131. Olsson, M. 2014. Flytande sågklassläggning på Iggesunds sågverk. *Flexible sorting of logs at Iggesund sawmill.* Institutionen för skogens produkter, SLU, Uppsala
132. Eriksson , F. 2014. Privata skogsägares betalningsvilja för skogsförvaltning. *Non- industrial private forest owners' willingness to pay for forest administration.* Institutionen för skogens produkter, SLU, Uppsala
133. Hansson, J. 2014. Marknadsanalys av douglasgran (*Pseudotsuga menziesii [Mirb.] Franco*) i Sverige, Danmark och norra Tyskland. *Market analysis of douglas fir (Pseudotsuga menziesii [Mirb.] Franco) in Sweden, Denmark and northern Germany.*
134. Magnusson, W. 2014. *Non-state actors' role in the EU forest policy making – A study of Swedish actors and the Timber Regulation negotiations.* Icke statliga aktörers roll i EU:s skogspolicy – En studie av svenska aktörer i förhandlingarna om timmerförordningen. Department of Forest Products, SLU, Uppsala
135. Berglund, M. 2014. Logistisk optimering av timmerplan – En fallstudie av Kåge såg. *Logistical optimization of the timber yard – A case study of Kåge såg.* Institutionen för skogens produkter, SLU, Uppsala
136. Ahlbäck, C.H. 2014. Skattemässiga aspekter på generationsskiften av skogsfastigheter. *Fiscal aspects of ownership succession within forest properties.* Institutionen för skogens produkter, SLU, Uppsala
137. Wretemark, A. 2014. Skogsfastigheters totala produktionsförmåga som förklarande variabel vid prissättning. *Forest estate timber producing capability as explainabler variable for pricing.* Institutionen för skogens produkter, SLU, Uppsala

138. Friberg, G. 2014. En analysmetod för att optimera skotning mot minimerad körsträcka och minimerad påverkan på mark och vatten. *A method to optimize forwarding towards minimized driving distance and minimized effect on soil and water.* Institutionen för skogens produkter, SLU, Uppsala
139. Wetterberg, E. 2014. Spridning av innovationer på en konkurrensutsatt marknad. *Diffusion of Innovation in a Competitive Market.* Institutionen för skogens produkter, SLU, Uppsala
140. Zander, E. 2014. Bedömning av nya användningsområden för sågade varor till olika typer av emballageprodukter. *Assessment of new packaging product applications for sawn wood*. Institutionen för skogens produkter, SLU, Uppsala
141. Johansson, J. 2014. *Assessment of customers' value-perceptions' of suppliers' European pulp offerings*. Bedömning av Europeiska massakunders värdeuppfattningar kring massaproducenters erbjudanden. Department of Forest Products, SLU, Uppsala
142. Odlander, F. 2014. Att upprätta ett konsignationslager – en best practice. *Establishing a consingnment stock – a best practice*. Institutionen för skogens produkter, SLU, Uppsala
143. Levin, S. 2014. *The French market and customers' perceptions of Nordic softwood offerings*. Den franska marknaden och kundernas uppfattning om erbjudandet av nordiska sågade trävaror. Department of Forest Products, SLU, Uppsala

Distribution
Sveriges lantbruksuniversitet
Institutionen för skogens produkter
Department of Forest Products
Box 7008
SE-750 07 Uppsala, Sweden
Tfn. +46 (0) 18 67 10 00
Fax: +46 (0) 18 67 34 90
E-mail: sprod@slu.se